The Plough, the Loom, and the Anvil.

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CENTRALIZATION.

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"THROUGHOUT three centuries, the house of Austria had exhausted against Hungary the acts of open violence and of secret intrigue; but the Hungarian municipal instructor had still, under the most arduous circumstances, conserved to Hungary some spirit of public life, and some part of constitutional liberty. It was at the time when this fatal sickness of political feeling *to centralize every power*, and to tutor the people into this notion of political wisdom—when this fatal sickness spread over the continent, and made its way even to his own country, so that it became *almost the fashion and almost the mark of intelligence to head toward the doctrine of centralization*, that he, with a few friends who stood by him, struggled against this storm, against those rushing waves coming over the spirit of Europe, because he regarded, and ever should regard, municipal life as a public benefit, without which there is no practical freedom whatever, and for the loss of which he thought all ministerial responsibilities and parliamentary privileges but a pitiful equivalent. In this land [England] were seen the finest fruits of this conquest of liberty—the glory outside, the freedom within, unwithered by the blighting finger of centralization."

SUCH are the words of M. Kossuth, as found in his first English speech, the one made at Southampton. Since then, he has exhibited himself every where as the advocate of local action and the opponent of centralization; and yet, singularly enough, every where as the advocate of the system of British free trade, the most remarkable case of centralization that the world has yet seen, and by far the most destructive that has existed since the downfall of the Roman Empire. In his speech at London, he informed his hearers that "the very day when Hungary proclaimed its independence, and intrusted" him "to be the chief," his "first deed was to send instructions" to his representative in England, "to make known to the English Government that the barriers of Hungary had fallen, and that Hungary was open to the industry of England."

There are few persons now living that are likely to exercise more influence over public opinion than is the late Governor of Hungary; and few who have shown themselves more entitled so to do, because of the talent and the virtue he has displayed; few, therefore, whose mistakes are likely more to prejudice the cause of real freedom; and it may, therefore, not be amiss to examine the views he has thus put forth, with a view to expose error, if error exist. That it does so, I confidently believe: as fully am I persuaded that its existence can be proved.

For more than a century, it has been the object of England to monopolize the trade and manufactures of the world, to *centralize* within her limits the machinery of conversion and exchange for the farmers and planters of the world. With a view to the centralization of the trade of Ireland in English hands, the people of that country were forbidden to make their exchanges with their fellow-colonists, except through the medium of English merchants, English

ships, and English ports. To compel the people of that country to send their wool to England, there to be converted into cloth by English hands, and by aid of English machinery, the manufacture of woolens was "discouraged" by the Revolutionary Government of 1688. To compel the people of these colonies to make their exchanges in England, and thus to *centralize* the machinery of conversion, manufactures of every kind were, as far as possible, restrained by law, and even the trade between colony and colony was subjected to regulations having for their object to compel the colonists of the south to carry their produce to English ports, there to be exchanged for the produce of their fellow-colonists of the north. The emigration of artisans was prohibited, lest they should carry abroad the knowledge required for enabling the producer of wool to bring the consumer to his side, and thus impede the growth of *centralization.* The invention of machinery for the conversion of cotton into cloth was accompanied by the enactment of laws prohibiting the export of such machinery, lest it might be transported to India, there to aid the native manufacturer in his labors for the production of cloth. Such was the course adopted in reference to all other descriptions of machinery, as well as in reference even to the export of men skilled in the mining of coal. The object of all these interferences with the natural rights of man was that of compelling the farmers and planters of the world to export their produce in the rudest and most expensive forms, and to use English ships for its transportation, while English merchants transacted the business, and English machinery compressed the produce into the forms fitting it for the use of man. Here was an effort at centralization on the largest scale that it had ever yet been tried, except in the Roman empire, and its effects were calculated to be even more injurious. The people of the Roman provinces were, it is true, heavily taxed for the maintenance of the great central power, and Rome grew in size and population, as Italy, Sicily, Greece, Asia, Africa, Gaul, and Britain, were successively exhausted; yet the people of the provinces were every where left free to combine their exertions for the production of the means required for the payment of the taxes. The object of the British system was every where to prevent the combination of effort for the purpose of rendering labor productive, and thus to cause waste of labor. The planter of the West Indies might not employ the leisure of his people in winter in refining the sugar grown in summer. The wool-grower of Ireland might not employ the leisure of his people in converting the wool into cloth. The cotton-grower of India might not employ his own spare time, or that of his neighbors, in converting into yarn the produce of his fields. The colonist of these provinces might not, at his leisure, aid his neighbor in converting his pig iron into nails, even for the purpose of shoeing the horses employed upon his farm. Every thing was required to be carried to England, and carried there in the form least fitted for transportation, that the sugar might there be refined; that the sheep's wool and the cotton wool might there be converted into cloth; that the pig iron might there be converted into nails or spikes; and that the sugar, the rice, and the corn, might there be eaten by the men who performed the work of conversion, while the men who raised the food and the wool, and made the iron, were unemployed at home.

At the close of the late war, the British empire exhibited a case of *commercial centralization* such as the world had never before seen, and compared with which those established by Venice and Genoa, the Hanse Towns and Holland, sink into insignificance. In Europe, Ireland, her subject, and Portugal, her ally, performed almost all their exchanges in her ports, and by aid of her machinery. In Africa, she had the important colony of the Cape; in Asia, Hindostan, with its hundred millions of inhabitants; in the Western

World, she had the Canadas, Nova-Scotia, New-Brunswick, the West Indies, and Honduras; and to her belonged all Australia, with the power of compelling the people of all the countries that have been named to come up to her with their products, that they might be taxed at her pleasure; and a mighty power it was. It is, however, to political, and not to commercial centralization that M. Kossuth objects; and yet an examination of the two will show that the latter is by far the most destructive. The object of both is that of securing the power of taxation. In France, the type of modern centralization and frequently referred to as such, there are collected about forty francs per head, in the form of taxes, a large portion of which is carried up to Paris, to be there expended; and it is in the power to collect those taxes and to direct the expenditure of their proceeds, that the great centralization of that country consists. Not a road can be made, nor a bridge be built, without authority from Paris. Compare, however, forty francs, or seven dollars and a half, per head, with the waste of labor in Ireland, consequent upon the absence of the power to bring the loom and the anvil to the side of the plough and the harrow, and it will be found to sink into insignificance. Let it again be compared with the loss resulting from the perpetual abstraction of the soil, in the form of produce, to be consumed in distant markets, returning to the land none of the manure, and it will be found that in that form alone the tax imposed by centralization is fully equal to it. If next we take the loss resulting from a total inability to bring into activity the coal, the iron ore, the limestone, and other of the mineral treasures of the earth, with which Ireland abounds—the waste of so many substances that are elsewhere made available to human purposes—the poverty of machinery resulting from all this taxation and all this waste—and the waste of labor upon poor soils, that might be given to rich ones, and would be so given but for the poverty which forbids that they should be reclaimed; and then add the whole together, and we shall find that, heavy as is the taxation of France, resulting from political centralization, it is as nothing compared with the taxation of Ireland, resulting from commercial centralization, the worst of all the forms of tyranny that the ingenuity of man has ever yet devised. Its consequences are seen in this fact, that the country—one of those most richly endowed by nature—is being depopulated, and is likely to be utterly abandoned by the whole Irish race, unable to live under the despotism of the British commercial system, the leading advocate of which tells its readers that they, its editors,

"Have repeated almost *ad nauseam* that the people are leaving us at the rate of near a thousand a day. In Ireland, the fact is brought home to the understanding in so forcible a manner by the actual sight of emigrant trains, emigrant ships, *depopulated districts, ruined habitations*, and labor beginning to rise in the market, that it cannot be disposed of so easily as in this country. In England, it has been anticipated, by some writers, that when the Irish population should be reduced to a certain low level, the inducements to remain would rise so high that the migration would stop, and the remnant left behind would be contentedly and permanently attached to the soil. The Irish authorities, as we are disposed to think very correctly, *do not expect the migration to stop as soon as the population has assumed its proper proportion to the work to be done.* The people who have been in the habit of paying 30s. an acre would not now remain on the land if it were reduced to 20s. or 10s.; they will have it at no price. Their minds are completely made up to go after their friends—to go home; that home not being 'Ould Ireland,' but the 'Far West.' *The stream once set that way, it will not stop till Ireland is absolutely depopulated*, and the only question is, when will that be? Twenty years at the present rate would take away the whole of the industrious classes, leaving only the proprietors and their families, members of the learned professions, and those whose age or infirmities keep them at home. *What if it should come to pass that, before another twenty years, the whole Celtic race shall have disappeared from these isles, and the problem of seven centuries received its solution?*"—*Times*.

It is here supposed that depopulation tends to bring down the number of people to "a proper proportion to the work to be done;" and it seems to be forgotten that each man who leaves the kingdom is, or should be, a consumer as well as a producer, and that, if he sold his labor, he must necessarily purchase something produced by the labor of others; and that, if his departure diminished the quantity of labor in market, it likewise diminished the demand for that of those he left behind. Further, it is forgotten that it is by combination of action that labor is made productive, and that each step in the progress of depopulation diminishes the power of association, *every act of which is an act of trade;* and that each step in this direction renders it, from day to day, more necessary to carry out the process already so well begun.

If next we turn to Scotland, we find the same process now in full operation—depopulation, as a consequence of centralization—precisely as it was witnessed in Italy of the olden time, where the city grew in size by the exhaustion of the country, and the land became from day to day more and more monopolized by the few, and slaves cultivated the soil that before was owned by freemen. The northern counties have been, by the expulsion of their inhabitants, converted into a desert, and the details of the system now in progress are to the last degree revolting to humanity. In the west are nearly a hundred thousand people with whom the idea of perishing by starvation is quite familiar, while the lanes and alleys of Glasgow are filled with the remnants of families that have been expelled from the land. Such is the effect of commercial centralization within the limits of Great Britain itself; and if with this we compare the worst results of the system of France, we shall find that the people of Scotland would gain by an exchange from commercial to political centralization.

Turn we now to India.* Half a century since, the people of that country supplied the world with cotton goods. Their machinery was rough, it is true, but it could readily have been improved; and it would have cost far less to carry to Calcutta a few ship-loads of spindles and looms to aid in the conversion of Hindoo cotton into clothing for Hindoo men and women, by aid of Hindoo laborers, eating Hindoo rice, than to carry tens of thousands of ship-loads of cotton and rice to Manchester, to be returned in the form of cloth to Calcutta; thence to be carried into the interior, in a country totally destitute of roads and bridges. Such, however, was not the policy of England. She would *not* permit the machinery of manufacture to go to India, and she *would* insist on supplying India with cotton goods. In exchange, she took rice and cotton; but, to prevent improvement in that country, she subjected cleaned rice to a heavy duty, from which paddy, or rough rice, was exempted; a measure that could have been exceeded in folly and rapacity only by a similar bounty on the import of cotton in the rough, with a view to secure the profit of ginning it.

England had grown rich. For more than half a century the wealth of India had been in course of being transferred to her coffers, by aid of Clives, and Hastingses, and numerous other members of the same family—men of the great race who live by the labor of others—and thus, while the one became enriched, the other became poorer from day to day. Towns and villages, by thousands, had been abandoned during endless wars, and extensive districts, embracing the most fertile lands, had relapsed into jungle; and tigers now occupied the ground that before had given food and clothing to hundreds of

* The following sketch of the course of affairs in India is taken from my work, "The Past, Present, and Future," with, however, occasional alterations.

thousands of poor but industrious people; the consequence of which was, that the poorest soils were cultivated with the worst machinery.

The stock of a ryot consisted of a plough not capable of cutting deep furrows, and only intended to scratch the surface of the soil, with two or three pairs of half-starved oxen. This, a sickle used for a scythe, and a small spade or hoe for weeding, constituted almost his only implements for husbandry. Fagots of loose sticks, bound together, served for a harrow. Carts could be little used in a country where there were no roads, or none but bad ones. Corn, when reaped, was heaped in a careless pile in the open air, to wait his leisure for threshing, which was performed, not by manual labor, but by the simple operation of cattle treading it out of the ear. He had no barns for stacking or storing grain, which was preserved, when required, in jars of unbaked earth, or baskets made of twigs or grass. The cattle were fed in the jungle, or common waste land adjoining his farm; and buffaloes, thus supported, generally supplied him with milk. Horses were altogether unused in husbandry. The fields had no enclosures. Production was small, and the great absentee landlord took one half of the small amount, thus rendering impossible any improvement of his machinery. He could not buy looms and spinning-jennies, even if England would have sold them, which she would not. The necessary result was, that the poor manufacturer was first driven out of the market of the world, and then out of his own; and thus the small existing tendency to concentration diminished as centralization increased. From being a consumer side by side with the producer of cotton, he was driven to seek elsewhere poor soils that he might scratch with his stick, in the almost vain hope of obtaining a sufficiency of food; and thus was the amount of raw cotton to be exported increased for the supposed benefit of ships and factories owned by British capitalists, who heeded little the sufferings of the poor Hindoo weaver, deprived of all market for his industry. Having thus compelled the use of the inferior machinery of exchange in the form of roads, to be used for transportation of food or cotton, in place of better machinery previously used for converting the food and cotton into cloth, the export of cotton now went on; but at length the people of the northern United States, driven to the poor soils of new States and Territories to raise food, instead of concentrating themselves on the rich soils of the old ones, for the purpose of consuming it, forced the planter from the production of food to that of cotton, with which he filled the world; and now the poor Hindoo could produce for Europe neither the raw material nor the cloth. Next, we find him, in default of other employment, largely engaged in cultivating opium for his neighbors, the Chinese. The trade grows large, and Chinamen use it freely, because cheaply supplied. The Government takes alarm, and destroys the opium, and England takes offense; and now Chinese cities are ruined, their men destroyed, and their women outraged, and the country is laid waste, that English subjects may employ in producing intoxicating drugs the labor that should be employed in converting cotton into cloth, while the laborer ate food produced by the man who was to wear the cloth.

The tendency of the whole system of commercial centralization is that of compelling men to waste labor in transportation that might profitably be applied to production. Cotton and rice *must* go to England, that Englishmen may eat the one and fashion the other. Such being the law, it might be supposed that some labor might be applied towards perfecting, in some small degree, that description of the machinery of exchange, the use of which was still to be permitted: to wit, roads and bridges; but the reader would greatly err who might suppose that possible. History affords no record of any proceed-

ing of the kind on the part of that worst species of tyrants, the trader armed with power over his fellow-men. Of the vast revenues of that country, derived from the appropriation of one half of the gross produce, scarcely a rupee goes back upon the land. I have now before me an account of all the works of improvement in that country, with its population of one hundred millions, during a period of seven years, and it would be exceeded by the State of Rhode Island, with its one hundred thousand inhabitants. It is stated that the Government *does* now do something: that it actually expends twelve or fifteen thousand pounds per annum in the repair of roads! and that, too, in a country whose people are forced by erroneous legislation, over which they can have no control, to export its great product, because they may not be permitted to obtain machinery for fashioning it at home. The produce of the great cotton-growing districts on the Nerbudda is carried on oxen, each taking one hundred and sixty pounds, at the extreme rate, in fair weather, of seven miles a day. The distance to Mirzapore, on the Ganges, is five hundred miles, and the cost is two and a half pence, or five cents, per pound. Thence it goes to Calcutta, a distance of eight hundred miles, by water, unaided, I believe, by steam. From another portion of the cotton-growing districts, in the Deccan, the transport occupies a continuous journey of two months; and in the rainy season the road is impassable, and the traffic of the country is at a stand. *In the absence of even a defined road*, the carriers, with their pack-cattle, are compelled to travel by daylight to prevent the loss of their bullocks in the jungles through which they have to pass, and this under a burning sun of from one hundred to one hundred and forty degrees. If the horde, sometimes amounting to a thousand, is overtaken by rain, the cotton, saturated with moisture, becomes heavy, and the black, clayey soil, *through which lies the whole line of road*, sinks under the feet of a man above the ankle, and under that of a laden ox to the knees; and in this predicament the cargo lies sometimes for weeks on the ground, and the merchant is ruined! "Black, clayey soils," rich and fertile, are here superabundant; but the poor wretch who raises the cotton must cultivate the high lands that require neither clearing nor drainage, and his masters take half the product of their poor soils, while refusing even to make a road *through* the rich ones; yet forcing him to send his cotton to market to be exchanged for cotton cloth, manufactured thousands of miles distant. A system better calculated to compel men to continue cultivating the poorest soils, by aid of sticks, could not be devised; yet this is but a fair specimen of commercial centralization wherever it has existed.

We have here one of the destructive effects of the British system, but it is by no means the last. Of the revenues of this vast empire, no small share is distributed among the infinite number of great men charged with the duties of government, who pay themselves liberally; for a very few years of "exile" are deemed to entitle each to acquire fortune for himself and his children.* Salaries are large, and savings are considerable, and these savings are lent to the Government to enable it to pay the salaries; for, large as are the revenues, the debt grows regularly and rapidly. The lender, having accumulated a fortune, and having safely invested it at large interest, now returns home, and thenceforth he is entitled to an annual remittance of the interest; and to pay him and others like him, and to make dividends on East India stock, almost twenty millions of dollars are annually required, a sum sufficient to make yearly a railroad of six hundred miles; and this is to be paid by men who

* For a statement of the enormous salaries paid to officers of Government, see page 285, *ante*.

think that they might perhaps continue to grow cotton, if, in addition to bullocks, *they only had carts!*

Within the last sixty years, there has been levied on the poor Hindoos by and for the uses of that Government, to aid it in making dividends, paying salaries, and carrying on wars, in which, like that of Affghanistan, the poor tax-payers had no interest, more than six thousand millions of dollars! In return for all this, the poor people have received at the hands of their masters neither roads, nor canals, nor public works of any description, except barracks, prisons, and hospitals for their own troops. Deprived of all power to improve their wretched machinery of production, they are compelled to abandon rich lands, and cultivate the poorest—those from which the man who is destitute of a spade and an axe always draws his supplies of food. Such lands can afford no more than is absolutely necessary for the support of existence; yet of the miserable product the company takes one half, and calls it *rent*, and a large portion of the balance, and calls it *taxes*. The necessary consequence is, that any thing like accumulation is impossible. Each year must furnish the supplies of the year, and when a failure of crop takes place, the miserable people are swept off by hundreds of thousands. In the twenty years from 1818 to 1838, there were *nine years of famine*. That of 1837-8 was terrific, yet the unfortunate people were surrounded by millions upon millions of acres of the richest lands in the world, that they could not cultivate, because the Government left them no power to improve their machinery. The rivers were choked with dead bodies in the provinces where this very abundance of waste land existed. The air putrified with the stench of dead and dying human beings and animals, and the jackals and vultures were seen preying on the still animated bodies of our fellow-creatures. Mothers drowned their children by night, unwilling that the morning sun should witness their famishing state, and whole families of respectability poisoned themselves, rather than beg a little rice for their support; and, although a rupee's worth (half a dollar) of grain would sustain a man for thirty days, hydrophobia was becoming as prevalent as cholera!

In other quarters, the dead were lying in hundreds by the road-side, and it became necessary to form companies to carry them to the river, with a view to the prevention of pestilence. In Agra, the deaths were at the rate of ten thousand per month; and yet at this very period, enormous sums, the proceeds of taxes imposed on these wretched beings, were being lavished on the war in Affghanistan, having for its object a further extension of the system of commercial centralization.

So exhausted are these unfortunate people, that it becomes necessary frequently to remit the taxes, because of inability to collect them. No better evidence of their wretchedness need be offered than the fact that in lower Bengal, one of the most prosperous portions of the Company's territories, that in which they have been longest and most firmly established, the consumption of salt in three years, from 1834 to 1837, was less by one fifth than it had been in the three years from 1819 to 1822. Such is the necessary effect of a system that drives men from rich soils to poor ones, and then refuses to supply even a defined road to the unfortunate cultivator, who would consider himself "rich indeed," if that road were made practicable for a cart, to enable him to drag the produce of his miserable soils through the rich black clay that lies between him and the far-distant river.

Throughout India, the class of *native* great men—of those who live by the labor of others—is large. To them, however, is to be added the whole body of their foreign masters. Till recently, one of these latter, who might have

assaulted a native or ploughed up his land, could drag him to a distant city, where the cost of litigation is expensive to a degree five times exceeding those of the courts of England, enormous even as *they* are. Officers of these courts accumulate immense fortunes in a few years, out of the substance of ruined suitors. At Madras, the Supreme Court has, says Mr. Macaulay, fulfilled its mission: it has beggared every rich native within its jurisdiction, and is now inactive only for want of somebody to ruin. Great men are very numerous, and their shares of the produce of the poor soils are always large.* The labor of collecting their taxes is great, and they fix themselves their reward. The system is the same wherever men are forced to rely upon those soils for food. The many are weak and disunited, and the few plunder them with impunity; and this is the natural consequence of the exhausting system of commercial centralization.

The Hindoo may well say, that "nothing is left him but his skin." He knows no freedom but to die: and yet he is the subject of England, whose people are furnishing the world with missionary bishops to teach Christianity, the basis of which is, "Do unto your neighbor as ye would that he should do unto you." He is *the slave* of the same men who look with "holy horror" upon the sugar of Brazil and upon the cotton of Georgia; the latter raised by men who are better fed, better clothed, better lodged, and better taught, than a considerable portion of the people of England itself. He is their slave; for they will not permit him to combine his exertions with those of his fellow-men, to render their joint labor productive. They will compel him to send food and cotton to Manchester, that the latter may be twisted and woven, and then sent back to him. They will not permit concentration, without which the rich soils cannot be reduced to cultivation; and until they shall be cultivated, famine and pestilence must continue to sweep off the population; and East India proprietors must continue to *waste and destroy*, annually, millions of bushels of salt, that they may be enabled to realize their dividends from selling the balance at a monopoly price to the starving wretch who labors one half of the year to pay his rent, and one fourth of the balance to pay for that salt. The *ecorcheurs* of France, who flayed the unhappy people engaged in the preparation of the great food-producing machine, were bad; but those of England in India are worse. It is, throughout, a system of unmatched atrocity. Such is the condition of the men who raise the "free" cotton of India, for the maintenance of the "free-trade" system of England.

Nearly a century has now rolled round, since, by the battle of Plassy, the ascendency of England in that great country was secured; and such is the result. The Hindoo raises cotton, but he consumes only so much as will give him a strip to cover his loins. He raises rice, but he eats little, for he may not even clean it; and all this is done that England may be the workshop of the world, and that great manufacturers may accumulate millions by aid of the labor of over-worked and under-fed operatives. A system more selfish and unsound could not be conceived; nor could one more utterly destructive, both for herself and others, possibly exist. The results every where are the same—perpetual change of system, and perpetual need of change. Canada stagnates, and governors and forms of government are changed; but Canada still is paralyzed. Ireland starves, and Irishmen shoot agents; and curfew laws, and bills prohibiting the carrying of arms, are passed: but Ireland still starves

* A distinguished political economist, just now appointed to a judgeship in India, is to have, as the journals of the day inform us, £10,000, or almost $50,000 per annum, being double the salary of the President of this Union.

and borrows, and *will not* pay, because she *cannot*. Jamaica tries hill-coolies and free negroes, and coolies and negroes fail; and Jamaica still is poor. India cannot send cotton that will sell, and agents are sent to teach the poor Hindoo, who still cannot send cotton, because the rich soils are so abundant that his half-starved cattle, driven by their half-fed owner, cannot wade through them. Australia raises, on the poorest soils, a small supply of wool, for which she must be paid, while paying nothing for six millions of dollars annually charged to her account. English capitalists now propose railroads in India; but railroads never pay when made for people who cultivate the poorest soils, and cannot themselves make roads. India will grow rich, and rapidly grow, when India shall be independent, and shall protect herself against the centralizing power of England; but until she shall do so, and until she shall acquire power to place the consumer by the side of the producer, she must remain poor. In few countries of the world would population and wealth grow so rapidly, were she left alone; but so long as she must remit twenty millions to pay interest, and raise so many other millions to pay armies and officers, while compelled to cultivate the poorest soils with the worst machinery, neither can increase. England may change, and change again, abroad; but, before she can effect any improvement, she must learn to look at home, and not abroad; she must abandon the use of temporary machinery, and take to that which is permanent; she must *raise her own* food, and permit others to *consume their own*. She must increase her producers, and she must permit others to increase their consumers; and when she shall do that, India and Canada, Jamaica and Australia, will grow rich, while she will grow richer; but she will then cease to want colonies, or armies, or fleets, or great men. In the annals of the world, there is recorded no instance of self-deception greater than that which she now exhibits, except, perhaps, in that of France, who seeks dominion by aid of the sword alone, while she goes with sword and yard-stick. To which of the two should be awarded the credit of doing most to prevent the increase of human happiness, it might be difficult to decide, but I am disposed to think that she would carry off the palm. France wasted the Palatinate with fire and sword. The work accomplished, the armies were withdrawn. The poor people who were left breathed again; and, in time, they might restore their houses, and obtain fresh spades and ploughs to enable them to cultivate the rich soils. The yard-stick of England is a much more effective instrument. It produces famines and pestilences, recurring year after year, to sweep off all the population rendered surplus by the denial of the power of concentration. *Her* army is never withdrawn. The houses that it levels *cannot* be rebuilt. The spades and ploughs that it destroys *cannot* be replaced. The people *must* go to the poor soils, and they *must* have famines to keep the population down to the supply of food that England permits them to produce. The Company are disciples of Mr. Malthus. They take rent for the use of the "original and indestructible powers" of a soil that possesses scarcely any power, and thus starve the population down to the level of subsistence. Such is centralization in British India!

As the people of India become more and more impoverished, the land tends to centralize itself in fewer hands, with daily tendency to increasing centralization of power in the hands of the middlemen of Calcutta, sometimes styled "the merchant princes" of India, a class of men who produce nothing themselves, yet thrive by the taxation imposed by centralization upon the poor producers and poor consumers of the country. We live in the age of great cities. Glasgow grows as Sutherland is depopulated, and the people of the Western Highlands and those of the islands, north and west, are driven into

exile. Dublin, too, grows as famine and pestilence decimate the people of Ireland; and Manchester, Birmingham, and London, increase in numbers as Ireland and India are more and more impoverished.

It is, nevertheless, to the system that produces such effects that M. Kossuth looks for aid in the establishment of municipal institutions in Hungary! Upon what, however, are such institutions to be based? Is it not upon the people? and if the system expels the whole Irish nation, what becomes of their institutions? Where are the institutions of the north of Scotland? What has become of the vast body of village proprietors of India, and their local institutions? Time was when every village had such institutions; but they have disappeared as the little proprietors and the local manufactures have disappeared, and as the land has been more and more monopolized, with the progress of what in the Manchester school of political economy is known as free trade. For the establishment and maintenance of local self-government, it is needed that men should live near each other, combining their efforts for the common good; but British free trade repudiates the idea of association. It would have all the people of India to raise cotton, and all the people of England to manufacture it; and, that such might be the case, it would, as it did, forbid the export to that country of any machinery for converting the cotton into cloth. It would have a monopoly of the power of taxing the world, while French and Austrian centralization looks only to the taxation of the people of France, of Austria, and of Hungary.

Look where we may throughout the British colonies, we find a tendency to centralization of power constantly increasing with the desire for the centralization of trade. In the days of the Stuarts, the new colonies obtained charters, by virtue of which they governed themselves; but in more recent times, such colonies are governed from home, and the consequence is seen in the fact that men of small capacity are every where seen to be receiving large salaries for misgoverning the poor people who fly from home to seek in the colonies the means of obtaining supplies of food and clothing. To "centralize every power," in relation to the colonies, is now regarded as being the height of "political wisdom." And yet it is to such a system as this that M. Kossuth is induced to look, as the antipodes of centralization!

Again: if we look to England herself, we find that precisely as the land becomes more and more consolidated, government commissions, invested with arbitrary power, are superseding the municipal institutions of earlier and more prosperous days; and so universal is now this tendency, that, to use the words of the great Hungarian, in speaking of the continent of Europe, it has become "almost the fashion, and almost the mark of intelligence to head towards the doctrine of centralization." Not a session of Parliament now passes by, without a new usurpation of power on the part of the central authority; and these usurpations are always defended on the ground of necessity. But whence has arisen this necessity? Is it, is or it not, that, under the system that has depopulated and ruined Ireland and India, the people of England have become poorer and weaker, and less able to protect themselves by aid of the local institutions of earlier days? In answer to this, it is needed but to remark the fact, that of the two hundred and thirty thousand independent owners of English land that existed seventy years since, almost two hundred thousand have already disappeared, and their places are now occupied by day-laborers and tenants-at-will, the growth of centralization. It is, nevertheless, to a country that presents to view a state of things like this, that we are referred as presenting one in which are seen "the finest fruits of the conquest of liberty; the glory outside, the freedom within, unwithered by the

blighting finger of centralization!" Widely different from this is the view presented of the course of events by one of the earliest of the friends of Hungary, and one of the most eminent of the writers of our day, Walter Savage Landor, who says: "Centralization is the grasp of despotism; municipalities are the commons and promenades of a free people. By the contraction of the one, and the enclosure of the other, *we are losing our strength and freshness every day;*" * and such must be the conclusion of every man who studies the course of English legislation.

The tendency of the English commercial system is adverse to local association for any purpose whatsoever, and it is so because the object which it seeks to accomplish is the monopoly of the manufactures and trade of the world; and monopoly and freedom of trade, or of man, are inconsistent with each other. The freeman exchanges his labor and its proceeds where he will—the slave exchanges where he may—and every attempt at commercial centralization has for its object to limit the power of those subject to it, as to the place at which they will exchange their labor and its products, and thus to convert the freeman into the slave. The power of self-government grows with the growth of wealth and population, for with each step in that direction there is an increased power and increased tendency to associate, and every act of association is, as has before been said, an act of trade. It diminishes with every diminution of wealth and population; and such is the tendency not only in all the countries that have free trade with England,—Ireland, Scotland, Portugal, the West Indies, India, the Cape of Good Hope,—but also in England itself, in which the habit of combined exertion for any purpose diminishes as the land becomes monopolized and as the day-laborer replaces the little proprietor; and of this no better evidence need be desired than the constantly increasing tendency to the investment in the funds of small savings by persons who, under a different system, would find their little capitals far more productive, could they themselves use them in aid of their own efforts. The same may be said of the vast extension of the system of life insurance, one of the surest evidences of diminishing power to employ labor and capital with advantage; and yet these very facts are perpetually adduced by the advocates of the existing system as evidences of progress. They prove increasing centralization, and centralization, despotism, and poverty go always hand-in-hand with each other.

Centralization and civilization are the antipodes of each other, and they are so because the one is the necessary accompaniment of despotism, while the other grows with growing freedom, and diminishes as freedom passes away. Centralization grows daily throughout the British empire; and so long as England shall continue to be the head of that empire and the dictator of its policy, her claims to rank in civilization must be weighed after an examination of the condition of her whole people: the powerful duke and the occupant of the mud hovel; the great chief of the clan and his miserable tenant; the wealthy manufacturer and the poor operative; the Irish landholder and his starving tenant; the rich West India proprietor and his late slave; the East India proprietor and his present slaves, decimated, at brief intervals, by famine and pestilence. So considered, the claims of England to civilization do not stand high; nor can they do so while she shall continue to present to view such enormous contrasts.

Half a century since, and perhaps even more recently, might be seen in the streets of Lisbon men with good coats on their backs, cocked hats upon their

* Quoted by J. Toulmin Smith, Esq., in his work entitled "Local Self-Government."

heads, and swords by their sides, but with bare feet and legs. These men thought themselves civilized, and so does England; and the civilization of the two is nearly alike. England has a very good coat, by which her body is well covered, but it has very short sleeves. The arms, to a great extent, are naked; and those arms represent a large portion of the people of England, badly fed, badly clothed, and very badly educated, while surrounded by rich lands, great mills, well-endowed colleges, and vastly rich bishops and archbishops. Her body is well covered, but her feet and legs, Ireland and India, are bare; and she keeps them bare, that she may have more to put upon her body; and she retains the sword by her side, that she may compel them to remain bare, that she may compel them to continue cultivating poor soils in sight of rich ones, undrained because of poverty, and uncultivated because undrained. In all this there is abundant centralization, but no civilization.

FARMING IN THE "PLATTE COUNTRY," MISSOURI.

To the Editors of the Plough, the Loom, and the Anvil.

It is my intention to contribute occasionally a short article to your valuable journal, on farming and the products of the north-western part of Missouri, a country not as highly appreciated as it should be, especially when we are soon to have the advantages of a railroad to connect with the eastern lines, terminating at your city.

When that facility for transporting the products of this country to market is offered, the North will realize and learn what we now know to be true, that there is no country on earth can surpass, and we think none can equal, the Platte country land for productiveness and large yield, with little labor. The original log-cabins, by thousands, that entitled the occupants to their land by preëmption, are still to be seen here; but while the owners have not built fine houses, they have, notwithstanding, done something in the way of improvement in farming, without the aid of chemical, mineralogical, or geological science. We know that soil, to produce wheat, corn, or hemp, requires moisture, warmth, air, and the light of the sun; but those of us who are *natives* know nothing practically of the use of *guano*, *gypsum*, or of any thing being necessary to enrich soil already too rich, and which produces better after many years' cultivation, especially in the wheat crop. We usually fill our barns easily, and find a home market at 75 cents per bushel for wheat. But this year the crop has almost entirely failed—not more than one third of the usual quantity raised—and yet our country is in a prosperous condition, our soil being well adapted to every agricultural production. While our neighbors from Ohio, Pennsylvania, and Indiana, who turn their attention almost entirely to the culture of wheat, fail in raising a good crop, we have the Kentuckians, Virginians, and Tennesseians amongst us, who will have their hemp, pork, and cattle; and at all times some one of the great staples will be abundant and bear a good price. Hemp is our great staple, although wheat can be made more profitable. It seldom ever fails, unless it is an exceedingly bad season, such as the last, when we had constant rains during the spring months, causing many crops to be entirely ruined. Every variety of wheat has been tried here, and I am very sure the Mediterranean is the best for this climate and soil, whilst the smooth head is the most likely to fail of a good yield. The grain, when well matured, is often small and shriveled, whilst the Mediterranean is long, full, and plump, weighing from 60 to 68 lbs. per bushel. But much is to be learned yet by our farmers in the culture of wheat in this country.

All the poor crops can be traced to some mismanagement of the farmer. Whenever good clean seed is sown by the first of September, at the rate of one and a half bushels to the acre, and the ground well rolled and made level, a yield of from 25 to 30 bushels to the acre is almost sure to be harvested. A small farm of 80 acres, 50 of which is cleared land, can be bought here for about 500 dollars. Sow 50 acres of this in wheat :

Buy the seed, say 70 bushels, at 75 cents, - -	$53 50
Pay for ploughing, sowing, harrowing, and rolling, at $1 per acre, - - - - -	50 00
Cutting, - - - - - - - - -	50 00
Thrashing and sacking, - - - - -	70 00
	$223 50

Showing two hundred and twenty-three dollars and fifty cents for all expenses attending the cultivation of 50 acres, or four dollars and forty-seven cents per acre. The 50 acres will yield fifteen hundred bushels of good clean wheat, worth as much at home as at St. Louis, and will command at this time, at mills, from 60 to 75 cents, making, for the fifteen hundred bushels, at the latter price, - - - - - - - - - $1125 00

Less for expenses, - - - - -	223 50
Nett profit, - - - - -	$801 50

This cannot always be done, but it has been done, and may be done again ; or, if *one half* of the amount is realized, it will nearly pay for a small farm in this part of the West.

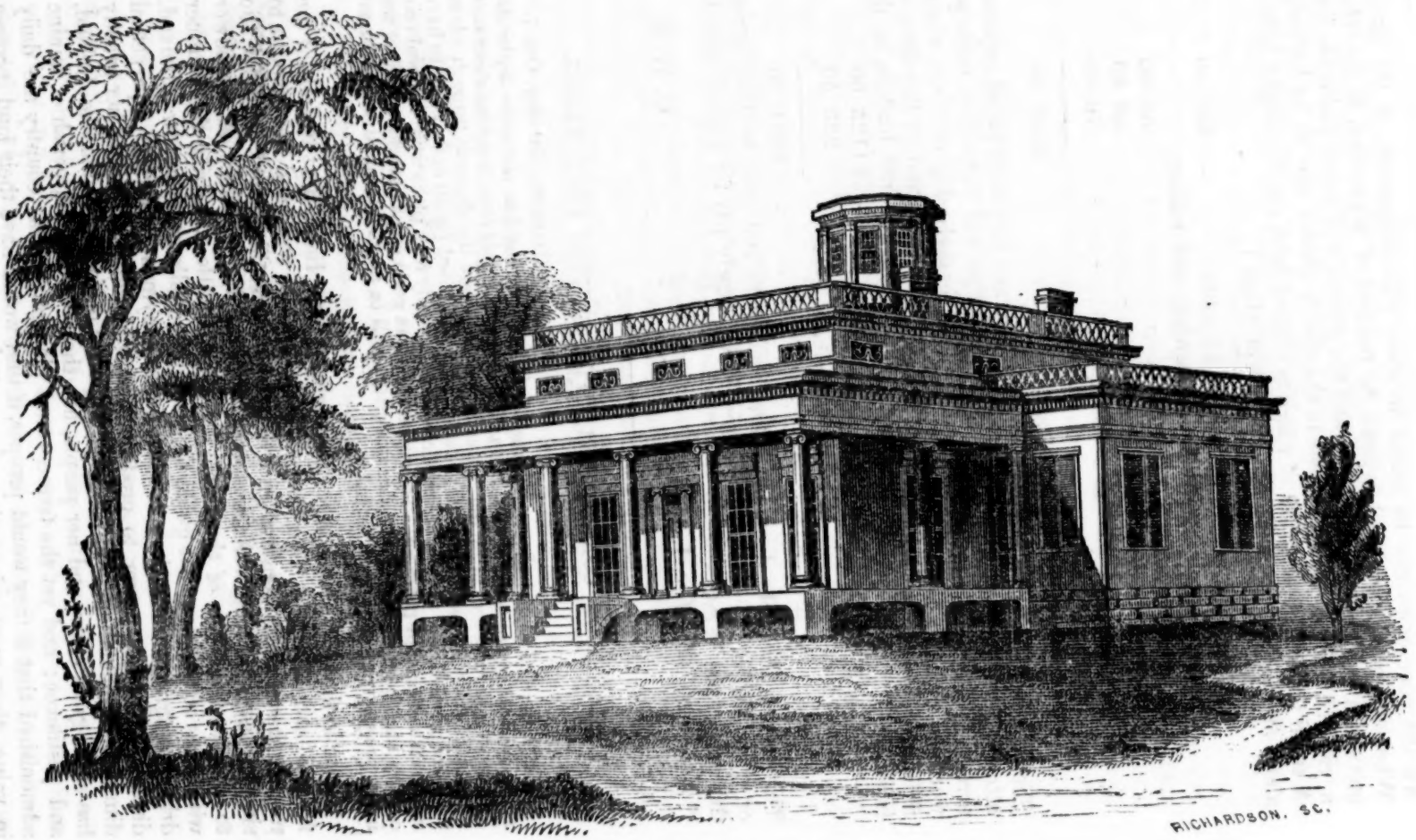
Savannah, Mo., Dec. 1, 1851. G. W. S.

EXHAUSTION CONSEQUENT UPON BRITISH FREE TRADE.

"CALCUTTA, Tuesday, Oct. 7.

"UP to the closing of business, *our import market continued in the same deplorable state in which the previous mail left it, and business very nearly came to a total stand-still.* The reports of sales sent in by the native brokers, who are the channels through whom alone sales and purchases of imports are effected, are supposed (small as they are) to have been exaggerated, and the few transactions which actually took place were for local consumption and prompt payment. The reports of short grain crops in various parts of the country have been confirmed, and this misfortune will be an additional adverse element in the prospects of our import trade."

SUCH is the story that comes by every mail from India, next to Ireland the favored land of British free trade. From week to week and from month to month, the markets continue in "the same deplorable state ;" and for the simple reason that agriculture perishes with the disappearance of the power to combine the labors of those who drive the shuttle and strike the hammer with those of the men that guide the plough and follow the harrow. Ireland, driven to agriculture as the sole source of employment, witnesses a perpetual diminution of her power to produce food, and, notwithstanding her greatly diminished population, is now a large importer of food. India, like Ireland, has short grain crops, and her people, like those of Ireland, perish of famine and pestilence ; and yet the farmers and planters of this country are daily admonished that if they would prosper, if they would have their land increase in value, they must adopt the same policy that has ruined, and is now depopulating, both Ireland and India.



COTTAGE DESIGNS, No. 1.

COTTAGE DESIGNS, NO. I.

THE engraving on the opposite page is the first of a series of Cottage Designs we propose giving in the *Plough, the Loom, and the Anvil.* They will constitute a new feature in our journal, and we have no doubt will be highly acceptable to all our readers:—

Good taste in architecture, like good taste in all other things, is the result of education, and must, of course, be progressive. The gradual advancement made by mankind in the construction of their dwellings, from the time when they lived in mud hovels up to the present, when they live in marble houses, has been very slow, but it has been sure and constantly improving. Let us not vainly imagine, therefore, that we have arrived at perfection, because our houses so much excel those which were inhabited by our grandfathers; we are still in a transition condition, and, while we remain contented with our present improvements, we may rejoice that our children will be better housed than ourselves. But the advancement of society is not uniform; while one man shoots far ahead in the race of improvement, another lags behind, and scarcely advances a step from the position occupied by his ancestors. Yet no individual can separate himself wholly from the rest of mankind; he may cling with idolatrous fondness to the ways of his fathers, but he cannot wholly resist the pressure of circumstances by which he is surrounded. He may build his house to resemble in externals the forms of dead centuries, but interiorly it must conform to the times in which he lives. We build churches after mediæval patterns, but we fill them with modern conveniences. Wilton carpets and gas-lights harmonize but oddly with Gothic arches, yet we cannot sacrifice the comforts to which we have been educated to our reverence for old ceremonies. Just where Gothicism interferes with our comforts, our admiration for its forms ceases. Precisely the same rule holds good in our dwellings as in our churches; we may imitate some of the picturesque points of old houses, but we admit nothing that interferes with our social enjoyments, and in this we are true to ourselves, and admit that we care more for present comforts than for the ways of our ancestors. The man cannot imitate the child if he would; neither can the present imitate the past. We have been irresistibly forced forward, and so gradually that it would be difficult to mark the point where our advancement commenced, or name the precise nature of our improvement; but we have only to look back a few years, and we see that the tide of human progress has floated us onward into regions that were unknown to our fathers. Still, as we have remarked, this advancement is very far from being uniform; the few get ahead, and the many lag behind.

The engraving is a view of a Grecian Cottage on the banks of the Passaic river in New-Jersey, which was constructed with a design to combine all the arrangements that could be conducive to domestic convenience in a small dwelling. In style, the Grecian Doric, which is generally supposed to be adapted only to stately buildings for public uses, does not deprive it of its cottagely character, for cottages need not necessarily be rude and rustic in appearance, nor cramped in their dimensions. It is constructed in a style which beautifully harmonizes with the scene in which it is placed. It is situated in the town of Lodi, on the left bank of the Passaic river, in New-Jersey, and is constructed of wood in the Ionic order. The position of the house is elevated, and the hills at the back rise considerably above the roof, which is nearly flat. It is surrounded by fruit trees of various kinds, and the

general aspect of the building corresponds with the highly cultivated grounds in its vicinity. The main body of the house has two full stories, 11 feet and 9 feet inside. The principal floor contains a hall ten feet wide, two drawing-rooms, each 17 by 20 feet; a dining-room, and a parlor, each 17 by 16; a pantry and ante-hall, with principal stairway. In the second story there are four chambers and two bed-rooms; in the basement are a kitchen, two bed-rooms, a store-room, two pantries, dairy, cellar, scullery and fuel-room. The grounds in which this very elegant and commodious cottage is built, are laid out in a most tasteful manner, and well stocked with choice fruit trees and a great variety of ornamental shrubbery. The house fronts the south-west, and the library and breakfast-room are on the eastern side.

INFLUENCE OF THE SOLAR RAYS UPON THE VEGETABLE KINGDOM.

THE GERMINATION OF SEEDS AND THE GROWTH OF PLANTS.

The germination of the seed and the development and growth of the plant is one of those beautiful and interesting processes of nature which, although common, is not regarded with that degree of interest and importance which should characterize the subject, and which those who are accustomed to watch closely the phenomena of nature's natural and physical laws, and the gradual and curious development of her powers of production and perpetuation, view it. In the various forms of vegetable life which we discover every where around us, we behold the elements of those which are to follow. Every species of plant, shrub, and tree, after having flourished, lived its accustomed period, perishes, and in its decay forms a soil for the germination of such plants or shrubs as succeed it in the scale of vegetable life.

If we place the minutest seed in even a few grains of earth, we find it in a very short time springing into life. Its branches are developed, its leaves unfolded, its flowers and fruit are produced, and, although a noble and majestic tree may have arisen apparently from the earth in which it stands, it will be found, on investigation, that the soil from which it grew will have suffered but very little diminution. Experiments have been made in the most satisfactory manner, and it has been proved that a very small amount only of the soluble constituents of a soil are taken up by the roots of a plant; we have then to look to other sources for the origin of the woody matter, of the acid and saccharine juices, of the gums and of the resins, yielded by the vegetable world. These are all, it will be found, formed by some mysterious modifications of a few elementary bodies, acted upon by the solar rays; and these are the phenomena which it is our business at present to examine.

Mr. Robert Hunt, Secretary of the Royal Cornwall Polytechnic Society, in a late treatise, after demonstrating that the conditions necessary to germination are moisture, a moderate temperature, and the presence of oxygen gas, remarks:—"It has already been remarked, that Michellotti proved light to be injurious to germination, and Ingenhouz and Sennebier found that seeds germinated more rapidly in the shade than in sunshine. This fact has been more recently established, beyond all doubt, by the author."

Mr. Hunt next details several experiments which were made by him with great care and accuracy, and gives the methods by which he obtained the several results. His investigations were first published in the *Philosophical Magazine* for April, 1840, and have, since that, been continued, grants having been made to the author by the British Association; and a report of the progress

of the inquiry will be found in the report of the Association for 1842. It is necessary, for a correct understanding of the results obtained, that all the conditions under which the experiments have been made should be distinctly stated.

Six boxes, he states, were so prepared that air was freely admitted to the plants within them, without permitting the passage of any light, except that which passed through the colored glasses with which they were covered.

These glasses permitted the permeation of the rays of light in the following order :—

1. A Ruby Glass, *colored with Oxide of Gold.*—This glass permits the permeation of the ordinary red and the extreme red rays only.

2. A Brown-Red Glass.—The extreme red rays appear shortened ; the ordinary red ray and the orange ray pass freely, above which the spectrum is sharply cut off.

3. Orange Glass.—The spectrum is shortened by the cutting off of the violet, indigo, and a considerable portion of the blue rays. The green ray is nearly absorbed in the yellow, which is considerably elongated. The whole of the least refrangible portion of the spectrum permeates this glass freely.

4. Yellow Glass, *somewhat Opalescent.*—This glass shortens the spectrum by cutting off the extreme red ray, and the whole of the most refrangible rays beyond the blue ray.

5. Cabalt Blue Glass.—The spectrum obtained under this glass is perfect from the extreme limits of the most refrangible rays down to the yellow, which is wanting. The green ray is diminished, forming merely a well-defined line between the blue and the yellow rays. The orange and red rays are partially interrupted.

6. Deep Green Glass.—The spectrum is cut off below the orange and above the blue rays. Although the space on which the most luminous portion of the spectrum falls appears as large as when it is subjected to the absorptive influence of the glass, there is a great deficiency of light, and, on close examination with a powerful lens, a dark line is seen to occupy the space usually marked by the green ray.

A case was also prepared, containing five flat vessels filled with different colored fluids.

A. Red—*Solution of Carmine in Supersulphate of Ammonia.*—This gives a spectrum nearly in all respects similar to that given by the ruby glass (1) ; all the rays above a line drawn through the centre of the space occupied by the orange being cut off.

B. Yellow—*A saturated solution of Bichromate of Potash.*—This beautifully transparent solution admits the permeation of the red and yellow rays, which are extended over the space occupied by the orange ray in the unabsorbed spectrum. The green rays are scarcely evident.

From the absorptive powers of the sulphurets of lime and potash in solution, I was very desirous of using them, but they were found to be so liable to decomposition when exposed to the sun's rays as to be quite useless for my purposes, sulphuretted hydrogen being liberated in such quantities as to burst the bottles with great violence.

C. Green—*Muriate of Iron and Copper.*—This medium is remarkably transparent ; the blue, green, yellow, and orange rays pass freely, all the others being absorbed.

D. Blue—*Cupro-Sulphate of Ammonia.*—This fluid obliterates all the rays below the green ray, those above it permeating it freely.

E. White.—This is merely water rendered acid by nitric acid, for the

purpose of securing its continued transparency. It should be noted that spaces in the boxes have been left open to the full influence of the light, that a fair comparison might be made between those plants growing under ordinary circumstances and the others under the dissevered rays.

It will be seen from the above that the following combinations of rays have been obtained to operate with :—

1. and A. The calorific rays well isolated.

2. A smaller portion of these rays mixed with a small amount of those having peculiar illuminating powers.

3. The central portion of the solar spectrum well defined, and all the rays of least refrangibility, thus combining the luminous and calorific rays.

4. The luminous rays mixed with a small portion of those having a calorific influence.

5. The most refrangible rays with a considerable portion of the least so, thus combining the two extremes of chemical action, and affording a good example of the influence of the calorific blended with the chemical spectrum.

6. Some portion of those rays having much illuminating power, with those in which the chemical influence is the weakest under ordinary circumstances.

B. The luminous rays in a tolerably unmixed state.

C. The luminous rays combined with the least active chemical ones, as in 6 ; but in this case the luminous rays exert their whole influence.

D. The most refrangible or chemical rays well isolated.

E. White light.

From these arrangements it will be evident that, although we do not secure the complete isolation of the rays, as we should do with a prism, we procure light in which the great preponderance of one influence over others suffices to insure, to a certain extent, the decided action of that one. I am well aware that we only arrive at approximations to the truth by the system adopted, but I am also unacquainted with any method by which these experiments could be tried for any time otherwise than with absorptive media.

When we look on a spectrum which has been subjected to the influence of some absorptive medium, we must not conclude, from the colored rays which we *see*, that we have cut off all other influences than those which are supposed to belong to those particular colors. Although a blue glass or fluid may appear to absorb all the rays except the most refrangible ones, which have usually been considered as the least calorific of the solar rays, yet it is certain that some principle has permeated the glass or fluid, which has a very decided and thermic influence, and so with regard to media of other colors.

The relative temperatures indicated by good thermometers placed behind the glasses and fluid cells which I have used, will place this in a clear light. The following results present a fair average series, and distinctly mark the relative degrees in which these media are permeable by the heating rays :—

GLASSES.

Color.	Rays not absorbed.	Temp.
1. Ruby.	Ordinary red and the extreme red, - - -	87
2. Red.	Ordinary red, and orange, portion of extreme red,	83
3. Orange.	Little blue, green yellow, orange, red, and extreme red, - - - - - - - -	104
4. Yellow.	Red, orange, green, and blue, - - -	88
5. Blue.	Violet, indigo, blue, little green, and some red, -	94
6. Green.	Orange, yellow, green, and blue, - - -	74

FLUIDS.

A. Red.	Ordinary and extreme red, - - - - -	78
B. Yellow.	Ordinary red and yellow, - - - - -	80
C. Green.	Blue, green, yellow, orange, - - - - -	69
D. Blue.	Green, blue, indigo, and trace of red, - - -	93
E. White.	All the rays, - - - - - - -	89

Here we see that, contrary to what we might have supposed at first, the highest temperature is not obtained behind the red media, but behind those which have a yellow or orange tint. Indeed, a higher temperature is found behind the colorless fluid than any of the others; and when we consider that the thermic influence is not confined to the red spaces of spectrum, but that it extends over all the visible rays and to a great extent below them, we see at once that a larger quantity of radiant calorific must permeate the least colored media. It will also be shown in a future chapter, that red glasses and fluids absorb a larger quantity of the heat rays than any others except black ones, and subsequently indicate a higher temperature themselves, although a lower one is observed behind them.

With these arrangements it was distinctly proved that, under the influence of the luminous and calorific rays, germination was in many cases entirely prevented, and in all the growth of the young plant was checked, and the development of leaves and buds prevented. The following results have been obtained with carefully selected roots of tulips and ranunculuses.

The first appearance of germination took place with the tulips under the orange glass (3), which was followed in three days by those under the red glass (2), then by those under the ruby glass (1), and next by those under the influence of the yellow (4), blue (5), and the green glasses (6). The roots under the orange glass developed the cotyledons a week earlier than those under the yellow, blue, and green glasses. But that the ranunculuses observed the same relative order in germinating, I should have suspected that some peculiarity in the bulbs had influenced the result, although these had been selected with the most scrupulous care. At first, the greatest progress was made by the tulips under the yellow (4) and orange glasses (3); but the leaves under each of these were by no means healthy, particularly under the yellow glass (4), which had a singularly delicate appearance, being of a very light green, and covered with a most delicate white blossom.

The leaf-stalks of the tulips shot up remarkably long, and were in both cases white; at length an exceedingly small flower-bud appeared on the plant under the orange glass (3), which perished almost as soon as it appeared, and the death of the plant immediately followed. The tulips under the yellow glass (4) never showed any buds, and their vitality soon failed them. The condition of the ranunculuses was in most respects similar to that of the tulips; they exhibited the same exuberant length of stalk, but the leaves were of a more healthful appearance. These plants, however, never showed any flower-buds, and they died nearly about the same time with the tulips.

It may be proper to mention that the garden-pots in which these roots were planted were filled with a mixture of fine earth, sand, and well-rotted manure from a hot-bed. A few days after their exposure, those under the orange and yellow glasses threw up several fungi, and continued for some days to do so, which was not the case with any of the others.

Under the ruby (1) and red glasses (2), the tulips shot up a *single lobe*, which maintained a little life for three or four weeks, but never rose more than

two inches above the soil. There was a marked redness upon this stunted formation, which I often fancied was in some respects characteristic of the kind of medium under which they were placed. The tuberous roots perished in the soil; sufficient moisture and warmth had called into action the latent principle of germination, but, being unable to maintain it against the destructive influence of the light, they rotted.

Beneath the green glass (6), the plants all of them grew slowly, but tolerably strong. They were, however, marked by a more extraordinary length of stem than those before mentioned, some of the stems of the ranunculuses being above ten inches in length, having a small leaf at the end, not more than two thirds of an inch in diameter. These plants all showed flower-buds, but none of them could be made to flower, notwithstanding the greatest care and attention was bestowed upon them; the effort of throwing up the buds appeared to exhaust their powers, and the whole of these plants soon died.

The results under the blue glass (5) were very different; the roots germinated, I think, a little less quickly than they did in the open ground, forming compact and healthy plants, developing their flower-buds strongly, and flowering in perfection.

Numerous experiments have been tried with the seeds of mignonette, many varieties of the flowering pea, the common parsley, and cresses; with all of them, the results have been similar to those already described. The seeds have germinated, in general, the most rapidly under the red glass (2), in the spring of the year; but when the heat of summer has advanced, the temperature of the red light has been too great, and germination has been prevented. Except under the blue glass, these plants have all been marked by the extraordinary length to which the stems of the cotyledons have grown, and by the *entire absence of the plumula*. No true leaves forming, the cotyledons soon perish, and the plant dies. Under the green glass (6), the process of germination has been exceedingly slow, and the plants, particularly the cresses and mignonette, have speedily died.

Under the blue glass (5) alone has the process gone on healthfully to the end; and, although I have found a few instances of a perfect plant under the yellow glass (4), it has not on any occasion yet endured to the formation of a flower. Excepting the plants under the yellow and blue glasses (4 and 5), all have been more or less etiolated.

The results in those cases where fluid media have been used, from the perfect isolation of the rays which have been thus obtained, have been much more decided. Under the influence of the light which has been subjected to the absorptive powers of the yellow fluid (B), *germination has been entirely prevented*. Under the red fluid (A), in some cases germination has commenced, but the young plant has speedily perished. Under the green (C), the plant has been developed, but in a very weak state, with pale leaves and nearly colorless stalks; but under the influence of the blue (D), the most perfect plants have been produced, and through all their stages maintained in the most luxuriant state. These experiments sufficiently prove that the process of germination is obstructed by the influence of LIGHT on the surface of the soil, although the bulbs and seeds have been buried some depth beneath it. The effects of HEAT, as exhibited by the red rays, are not, I think, to be regarded as destructive in themselves, as plants have been found to grow under the influence of these rays when they have been supplied with an extraordinary quantity of water, to supply that drawn off by continued evaporation, which has been equally rapid under the yellow media.

One very remarkable result must be noticed. Under all ordinary circum-

stances, plants bend in a very decided manner *towards the light.* In all my experiments with red fluid media, *they have as decidedly bent from it.* I do not know how to explain this as the effect of mere heat; it would appear that some property resides in the red rays, which acts in opposition to the general law. Further investigations are required on this point.

It has been stated by Dr. Draper that he has found, under the influence of the bright sun of Virginia, that plants have grown well in light which has been made to permeate a considerable thickness of an intense yellow solution. I am not certain if the germination of seeds has been effected under the same circumstances; but even if they have been made to germinate, it admits of explanation. The fervent rays of southern climes would permeate media by which the subdued rays of our latitudes would be obstructed. In proof of this, I may remark that, during the height of the splendid summer of 1842, I was myself successful in procuring the germination of a few seeds in the box (B), or under the influence of the yellow light. At the same time some very remarkable photographic results were obtained, which distinctly proved the atmosphere to have been in such a condition that a larger quantity of the sun's rays were enabled to penetrate it and reach the earth. It was also observed that the foliage of all trees was of a much darker green, and that many flowers, particularly those of a pink or pale red color, generally assumed a particular and decided blue or lilac tint.

The soil in which the plants grew was the same in each of the boxes used, but it was several times observed that, under the yellow glasses and fluids, fungi made their appearance. From the occurrence of these vegetables under the same circumstances on several occasions, I was naturally led to observe their production with greater care. I could not, with the utmost attention, make the *Agaricus muscarius* grow behind any other absorbent media than the yellow, under which it grew luxuriantly. This appears in some measure to explain the popular notion, that mushrooms and plants of that variety grow most abundantly under the influence of bright moonlight. It has never yet been found that any heat comes with the rays of the moon, and the amount of chemical action which has been detected is exceedingly small; we must therefore regard the moonbeams as consisting almost entirely of the luminous rays, the other active rays being in all probability absorbed by the moon's surface.

It is not at present in our power to explain, in any thing like a satisfactory manner, the way in which the luminous rays act in preventing germination. The changes which take place in the seed during the process have been investigated by Saussure: oxygen gas is consumed, and carbonic acid is evolved; and the volume of the latter is exactly equal to the volume of the former. The grain weighs less after germination than it did before; the loss of weight varying from one third to one fifth. This loss, of course, depends on the combination of its carbon with the oxygen absorbed, which is evolved as carbonic acid. According to Proust, malted and unmalted barley differs in the following respects:—

	Unmalted.	Malted.
Resin,	1	1
Gum,	4	15
Sugar,	5	15
Gluten,	3	1
Starch,	32	56
Hordein,	55	12

This shows that the insoluble principle hordein is, in the process of germina-

tion, converted into the soluble and nutritive principles, starch, gum, and sugar. We are therefore at present left in considerable doubt; we can only suppose that the luminous solar rays act, as indeed we find them to do on many of the argentine preparations, in preventing those chemical changes which depend upon the absorption of oxygen. A like interference has been observed by Sir John Herschel to be exerted by the extreme red rays of the spectrum; and, from the manner in which germination is impeded, in the case of the seeds covered by a deep red media (58), we may trace a somewhat similar influence.

I have endeavored, but as yet without being successful, to ascertain the real use of the cotyledon. Mrs. Ibbetson attempts to show that it is of no use for the purpose of nourishment, but that its office is merely to screen the first leaves from light and air. I am rather inclined to regard them as the lungs or gills of the young plant, in which, under the influence of the solar rays, the decomposition of air and water is effected. I shall not, however, in the present stage of the inquiry, venture on any further speculations on this matter.

THE WHITE BLACKBERRY.

The blackberry has long been considered one of the most useful of our native fruits, and we have frequently urged upon our friends the benefits that would result from attention to its cultivation, not only in increased size and flavor, but in the introduction of new varieties; still, from the ease with which the fruit can be gathered, but few have given any attention to the subject. Our eastern horticulturists, it seems, however, have been trying their skill upon it, and, from the prices quoted for the fruit in Boston last summer, we should presume with some success. A new variety, which we have heard highly spoken of, has been brought into successful cultivation by Mr. J. S. Needham, of Danvers, Mass., which he calls the *white* blackberry, the properties and mode of culture of which he thus gives:—

"These berries differ from all others of this species, and are the only ones that have been successfully cultivated. The fruit is sweeter than the common blackberry, rich and delicious, with a fine mulberry flavor, and of good size. It is the color of the white sweetwater grape, when partly shaded, but when it grows in the open sun, it is of a darker hue.

"The bush grows from four to six feet in height, and branches out like a pine tree, (that grows in open pasture,) beginning about four inches from the ground, and every limb is loaded with fruit to its utmost capacity; the two lower sets are brought to the ground by its weight. One bush, covering a space of ground four feet in diameter, has produced eleven quarts of fine fruit this season.

"The bushes stand in an open and exposed situation, and have had no protection of any kind; they have wintered well ever since they were found, and have borne every year. It forms a succession of the small fruits, coming in just after the raspberry, about the twenty-fifth of July, and continues bearing from twenty to thirty days, and is then followed by the wild high-bush blackberry.

"Soil.—It flourishes on soils varying from moist to dry, but the best is a rich, deep, rather moist soil. It needs liberal manuring, and good culture. Propagate by offsets, set five feet by eight, and in two years they will cover the ground; other crops may be raised in the spaces in the meantime.

"The blackberry bears on the growth of last year's canes. After the berries have been taken off, cut away at the ground all the old stems and the feeble ones, leaving two or three of the best canes. The stumps or main roots of my plants that are four years old are as large as a man's wrist. The best manure is ashes, leached or unleached, worked into the soil, and mulching is of great service to them."

TARIFF CONVENTION IN NORTHERN NEW-YORK.

Essex and Clinton counties, in northern New-York, have long been known as a valuable and extensive iron region, whose ores are of the richest kind, and yielding a metal of the best quality. The mountainous character of the country, its bold and lofty hills, and its general roughness, are natural barriers to any attempt to make this an agricultural district as the principal source of wealth to the people. A fair reward for the employment of labor and capital must, therefore, be found in some other industrial department, or these counties must be left to the partial cultivation which would wrest a limited remuneration from the soil.

The vast mineral wealth of this region could not long remain unknown and untried. Prompted by the "incidental" protection of former years, and the hope of an enlightened and discriminating policy on the part of the general government, and recently more so by the tariff act of 1842, a large amount has been invested in the production of iron. Almost from Lake Champlain, twenty-five miles up the Au Sable River, and in various parts of the two counties, extensive establishments are engaged in the manufacture of iron, and articles of iron—nails, castings, machinery, &c. Several thousand men are employed, directly or indirectly, in the iron interest, affording subsistence to about one third of the population of this region.

The operation of the tariff of 1846 has been disastrous in these counties. All interests alike are suffering. Thousands of laborers, who were formerly employed at remunerative wages, are now seeking employment. The capital of the country is depreciated about one fourth, and in every branch of industry, the prostration of business, by the fatal operation of the present tariff, is now beginning to be very severely felt.

The necessity for a revision of the present law is sufficiently demonstrated, not only here, but by the state of things in Pennsylvania, in immediate reference to this vast interest of our country, not to speak comprehensively of all others. Some measures have been deemed proper and imperative, in order to lay the matter before Congress, for the purpose of procuring an early modification of the tariff of 1846. A call having been published, inviting all persons friendly to such a measure to assemble in convention at Keeseville, Essex co., on Wednesday, Dec. 17, 1851, we made it our duty to be present and attend the meeting.

The Convention was of a high order for the intelligence and moral worth of those who composed it, as well as for the public positions now or lately held by many of the delegates. That it is a true expression of the united wishes and resolves of the people of Essex and Clinton, we have no doubt.

The Convention was called to order, at two o'clock, by Hon. James S. Whallon, when the following gentlemen were chosen officers of the Convention:—

President.—Gen. Henry H. Ross, of Essex, Essex co.

Vice-Presidents.—Hon. M. F. Haile, and Hon. Thomas Crook, of Clinton co.; Hon. Eli W. Rogers, and Charles M. Watson, Esq., of Essex co.

Secretaries.—James B. Dickinson, of Franklin co.; John S. Gould, of Essex co.; and Peter S. Palmer, of Clinton co.

The object of the Convention having been stated by the President in a brief address, on motion of James S. Whallon, of Essex co., a committee of seven was appointed to draft resolutions and report business to the Convention. The President announced as that committee the following gentlemen:—

James S. Whallon; George A. Simmons; J. D. Kingsland; John Gould, jr.; John Rogers; Saint John; B. L. Skinner; and Henry G. Hewitt.

On taking the chair, the President remarked, in substance, that there could be but little difference in opinion as to the purpose and action of the Convention. There is but little difference of opinion in northern New-York on the tariff question. It is universally conceded that unless Congress should adopt the principle of protection, the interests of that part of the country would be entirely prostrated. Turn back to the organization of the government; we see that protection was recognized as necessary to the interests of the country. It has been abandoned, and now we must declare to Congress that we know and must protect our rights and our interests. We must support only those men for office who are known to be in favor of protection.

Gen. Ross proceeded to speak of the harmony of interests, and the reciprocal benefits flowing from protection, and the injuries sustained by all interests when that principle is abandoned. He spoke of the *ad valorem* duties, and the enormous frauds perpetrated by importers, who enter their goods under fraudulent invoices, and the great injustice thus done to the government as well as to the American producer; and urged the Convention to consider specific duties as the only rates which can satisfy the wants of American labor.

While the Business Committee were engaged in their duties,

C. F. Tabor, Esq., of Keeseville, in a brief address, remarked that he should not argue the question of protection. The theory of free trade is very attractive, and a tariff of high duties may be condemned as all wrong. In some countries, in which circumstances favor, free trade may be an advantage, but it is a plain and established fact, that where labor is worth as much as it is in this country, protection is necessary. Our labor is not as cheap—God forbid it should ever be!—as it is in other countries. Now, what is protection? He sometimes thought that the laborers who work out our products do not understand its first principle. It is only *a measure to preserve our labor from the competition of the cheap labor of foreign lands.* A tariff bill should be called, "*A bill to protect American labor from destructive competition.*" Mr. Tabor illustrated this point by a comparison of the amount of labor and raw material in a ton of iron. The cost of the manufactured iron is only the price of the labor expended in its production. Hence, if the laborer is not protected, he must either stop production or put down the price of his labor. These bloomers, miners, and colliers cannot say, "We can go to other trades." They find other trades overstocked with laborers. Farmers are interested. Their own business may be deluged by laborers. When all other pursuits fail, the laborer has recourse to agriculture; and when agriculture fails, he must starve.

The speaker proceeded to describe the present depressed state of all the business of the northern part of New-York. The laborers who were now seeking employment, and those who would soon be discharged, are a loud witness of the urgency of immediate measures for relief, and a revival of the great interest of Essex and Clinton counties.

Several other gentlemen, Hon. Eli W. Rogers, Hon. J. H. Holt, G. W. Goff, and Wm. Oland Bourne, addressed the Convention.

The Business Committee having resumed their seats, George A. Simmons, Esq., on behalf of the committee, submitted the following Report and Resolutions:—

REPORT.

THE Committee report, that in relation to the Iron interests of Northern New-York, that portion thereof embraced in the Sixteenth Congressional District, composed of the

counties of Clinton, Essex, and Franklin, including all expenditures for both real and personal estate, purchased and employed for these purposes, consisting of Forges, Furnaces, Rolling Mills, Nail Factories, their appendages and machinery, together with the ore beds and woodlands appurtenant thereto, amount, at a moderate estimate, to three millions of dollars, the principal portion of which has been invested on the faith of the tariff acts passed prior to 1846, and has become already reduced to not more than one fourth of the original value; and must, without the revival of that protection, or some other revenue system by specific duties substantially similar and equal thereto, be totally sunk and lost. That the other interests of the same counties, including those of the operatives and workmen, as well as farmers, mechanics and merchants, immediately depending on and connected with those of the Iron Makers, are equal in amount to another three millions, which have been invested more or less on the faith of the same tariff laws, and must necessarily be depressed in about the same degree as the interests of the manufacturers themselves, under a continuance of the existing revenue system. That all the remaining interests of these counties are also more or less dependent on the Iron business, and are, and will continue to be, greatly depressed by its prostration.

That there are, in the same counties, about two hundred forge fires and six blast furnaces, which are capable of producing, and did produce in 1846 and 1847, from the ore, about fifty thousand tons of Iron per annum, including both pig and wrought Iron. That of this the forges produced about 32,000 tons yearly, worth then $45 per ton, and amounting to $1,440,000. That the pig Iron produced the same years was about 18,000 tons yearly, worth $30 per ton, and amounting to $540,000. That the yearly produce of all such Iron is constantly diminishing, amounting to only 12,000 tons of wrought Iron in 1851, worth only $25 per ton; and of pig Iron, to only 2,500 tons, worth only $17 per ton, and amounting in the whole to $342,000. That of the 200 forge fires, only about 90 are now in operation, and none of the furnaces are now in blast. That about 7,000 tons of the wrought Iron is used up by the rolling mills and nail factories here, which cannot be kept in operation by Iron produced elsewhere. The schedules accompanying this report, which have been carefully made out, will fully confirm these views of your Committee.

It appears from these tables, extending from the years 1846 to 1851, inclusive, that an extensive and heretofore fairly remunerating business, employing directly and indirectly more than 5,000 men, and giving subsistence to over one third of the population of the counties of Clinton and Essex, amounting to over $73,000, and essentially benefiting the whole in that respect, is already in a prostrate condition, and likely to be soon wholly abandoned, and the investments lost. It is certain, at the same time, that these counties possess within their limits the natural resources for the production of bloom and pig Iron of the best qualities, superior ores, water-powers, and forests for fuel, besides the advantages of long experience and skill, and the use of all the modern improvements in the Iron business.

Your Committee have no doubt that the *cause* of all this present depression and threatened destruction is the abandonment and want of specific duties on imported Iron, whereby that article is brought here from Europe, and laid down on our seaboard, cheaper than we can produce it, and this by reason, principally, of the low price of labor there, to which our population should never submit. Even if the English manufacturers are *obliged* to undersell their Iron, owing to the great accumulation on their hands, occasioned by a diminished market on the European Continent, this is no reason for neglecting to guard our own manufacturers and laborers against such a calamity. Your Committee are sure they speak the sentiments of the vast majority of the inhabitants of the XVIth Congressional District, when they affirm that nothing short of a tariff of specific duties on Iron, like those in operation prior to 1846, or at least equivalent to the ad valorem duties of the present tariff at that time, will satisfy their just claims upon Congress; and without starting anew the question of *protection* as a permanent principle in the United States, until we shall have reared a domestic system of manufactures competent to our own wants, and so as to place the manufacturer beside the farmer, we stand now on other and additional reasons, invoking the faith of our government toward our own citizens, and the right of our citizens to demand at the hands of that government the preservation of such investments, and the protection of so many laborers, in comparison with which all ordinary questions which reach the ballot-box are of little importance to them.

Your Committee, therefore, recommend the adoption of the following resolutions:

"*Resolved*, That the inhabitants of Clinton, Essex, and Franklin counties, composing the XVIth Congressional District, without distinction of party, are in favor of increasing the duties upon Imported Iron; and for that purpose it is the duty of Congress to change the present tariff from an ad valorem to a specific duty on that article, giving the same

protection that would have been obtained by the present ad valorem duty at a fair valuation when the same was imposed in 1846.

"*Resolved*, That we regard the ad valorem system of imposing duties as deficient in every particular, and especially so in giving the least protection when it is most required; that it has an unequal operation, and tends to great frauds on the revenue laws themselves.

"*Resolved*, That we are in favor of protecting fairly, and to a reasonable extent, every interest essential and necessary to the independence of the country, and especially those products for which it is possessed of every natural advantage, like that of Iron, and which, like that interest, give employment to the labor and capital of the country.

"*Resolved*, That, without distinction of party, we will hereafter support no man for any political office who is not in favor of such a system of specific duties as will adequately protect the labor and capital of the country, and who will not truly and efficiently represent our interests upon these questions; and that we will make this question paramount to all other state and national questions, and will persevere in our efforts until adequate protection is afforded to the industrial interests of the country.

"*Resolved*, That a Corresponding Committee be appointed, to consist of seven members, composed of Ed. Kingsland, C. D. Barton, John Rogers, W. S. Merriam, Henry Hewitt, Peter S. Palmer, and Henry N. Gould, to correspond with any other citizens or conventions, in relation to the objects of this meeting, especially with the other Iron districts of this State, and in other States, and with power to call future meetings in this Congressional District, if they deem it necessary.

"*Resolved*, That a Financial Committee be appointed, to consist of seven persons, with power to appoint sub-committees, if they deem it necessary, to raise funds to carry the object of this meeting into effect, and that the Committee consist of C. D. Barton, George W. Goff, and Henry H. Ross, 2d, of Essex county; James Rogers, Lawrence Myers, and Wallace Hartwell, of Clinton county; and James B. Dickinson and Samuel C. Weed, of Franklin county; and that the sum of six hundred dollars be raised by the 15th of January next.

"*Resolved*, That three delegates, James S. Whallon, C. F. Tabor, and Sidney Lawrence, one from each county, be sent to Washington, to represent the views of this Congressional District to Congress, and to procure the requisite modification of the Tariff Law." [Hon. Mr. Tomlinson was subsequently added to this delegation.]

TABLE A.

Rolling Mills and Nail Factories in Essex and Clinton Counties, New-York.

Location.	No. of Rolling Mills with Nail Factories attached.	No. of Heating Furnaces and Rolling Mills.	No. of Nail Machines.	No. of Men Employed.	No. of Tons of Iron used.	No. of Kegs of Nails produced.	No. of Tons Rolled Iron produced.	Price of Nails per Keg.	Average Price of Rolled Iron per Ton.	Whole Value of Nails Manufactured.	Whole Value of Rolled Iron Manufactured.	Cost of Nails per Keg.	Cost of Rolled Iron per Ton.
Keeseville, Clinton Co., N. Y.	1	4	55										
Clintonville, Clinton Co., N. Y.	1	4	40										
Ausable Forks, Essex Co., N. Y.	1	2	30										
Essex, Essex Co., N. Y.	1	2	20										
	4	12	145										
1846	....	....	...	280	8,000	120,000	2,000	$4 00	$80 00	$480,000	$160,000	$3 75	$75 00
1847	....	....	...	325	9,000	130,000	2,500	4 25	85 00	552,500	212,500	3 75	75 00
1848	....	....	...	322	9,000	130,000	2,500	4 00	80 00	520,000	200,000	3 75	75 00
1849	....	....	...	350	10,000	140,000	3,000	3 75	75 00	525,000	225,000	3 50	70 00
1850	....	....	...	350	10,000	140,000	3,000	3 75	70 00	455,000	210,000	3 25	65 00
1851	....	....	...	250	7,000	90,000	2,500	3 00	65 00	270,000	162,500	3 00	60 00

Price of Nails, December, 1851,.....$2 75

E. & J. D. Kingsland & Company.

Keeseville, Dec. 17, 1851.

TABLE B.

Showing the Manufacture and Value, &c., of PIG IRON, *in Essex and Clinton Counties, New-York, from* 1846 *to* 1851, *inclusive.*

YEAR.	Number of Furnaces.	No. of Furnaces in Blast.	Number of Tons Capable of Producing.	Number of Tons Actually Produced.	Number of Bushels Charcoal used.	No. of Tons of Ore used.	Total Value of Pig Iron.	No. of Men Employed, including Colliers & Miners.	Price per 100 Bushels Charcoal, at Works.	Price for 1 Ton of Ore, at Works.	Actual Cost per Ton of Pig Iron, at Works.	Market Price per Ton of Pig Iron, at Works.
1846.....	6	6	18,000	16,000	2,550,000	30,000	$416,000	1,200	$ 00	1 75	$22 00	$26 00
1847.....	6	6	18,000	16,000	2,550,000	30,000	416,000	1,200	6 00	1 75	22 00	26 00
1848.....	6	2	18,000	5,000	750,000	7,500	115,000	400	6 00	1 50	20 00	23 00
1849.....	6	1	18,000	3,000	450,000	4,500	60,000	300	5 50	1 50	18 00	20 00
1850.....	6	1	18,000	3,000	450,000	4,500	51,000	300	5 50	1 50	18 00	17 00
1851.....	6	½ year	18,000	1,200	180,000	2,100	20,000	150	5 00	1 50	18 00	17 00

TABLE C.

Forges in Essex and Clinton Counties, New-York.

Year.	Blooming Forges.	Forge Fires.	Tons Bloom Iron Capable of Producing.	Fires in Operation.	Tons Iron Produced.	Bushels Charcoal Consumed.	Price Charcoal per 100 Bushels.	Tons Ore used.	Price of Ore per Ton, at Forges.	Cost of Iron per Ton.	Worth of Iron per Ton.	Total Cost of Iron Produced.	Total Value of Iron Produced.	Bloomers' Wages for Making Iron, per Ton.	No. of Men Employed in Forges.	Whole Number Men Employed in Making Iron & Coal & Mining Ore.
1846	48	140	25,000	125	25,000	6,250,000	$6 00	62,500	$6 00	$38	$45	$950,000	$1,125,000	$8	1,000	2,500
1847	50	150	30,000	150	30,000	7,500,000	6 00	75,000	6 00	38	45	1,140,000	1,350,000	8	1,200	3,000
1848	58	190	32,000	160	32,000	7,000,000	6 00	80,000	6 00	35	40	1,120,000	1,128,000	7	1,280	3,200
1849	60	200	35,000	150	30,000	7,500,000	5 50	75,000	5 50	33	35	990,000	1,050,000	6	1,500	3,000
1850	60	200	35,000	100	20,000	5,000,000	5 50	50,000	5 50	32	30	640,000	600,000	6	800	2,000
1851	60	200	35,000	60	12,000	3,000,000	5 00	30,000	5 00	30	25	360,000	300,000	5	480	1,200

There are now only about 40 fires in operation, 30 of which will stop about the 1st of January next.

Dec. 17, 1851. E. & J. D. KINGSLAND & Co.

We hope the action of the Convention will be followed by corresponding action in other counties and States, and that it will result in a revision of our tariff, such as is demanded by the interests of the American laborer. We commend the above report and tables to the attentive examination of every reader. B.

RESULT OF MAKING A MARKET ON THE LAND FOR ITS PRODUCTS.

THE NEW-ENGLAND FARM-HOUSE.—There is an improvement in rural architecture, a care for the comfort of animals, some solicitude about planting trees and repairing fences, and a laudable desire to do well and look well has become general. We have found out that it is as easy and economical to erect a habitation with some pretension to elegance, as to disfigure the side of the highway with a pine box, an ugly lump of clapboards and shingles. We begin to think it is not profitable or becoming to allow the worm to spin his web in our apple-trees till the orchard looks like the ruins of a wasting conflagration. The practice is growing less frequent of suffering our cattle to carry about them a proportion of the barn-yard, solidly caked on for a winter overcoat, while, in regard to such remnant of the hide as is visible, a course of exposure and low diet, like the tale that Hamlet's father could have told, causes "each particular hair to stand on end." It has

also been discovered that, however appropriate the fur of the beaver may be for the head, it has a marked incongruity when protruding through a broken window. This peculiarity of our landscape might once have elicited some expression of surprise at the unusual number of hatters' shops, were it not corrected by the conviction, that no sane mechanic would ever exhibit such specimens of his handicraft. On the whole, we have arrived at the rather reasonable conclusion, that trees, like other things, require some attention after being planted; that cleanliness is about as essential to animals as good food, and that the fashion of glazing with old hats goes out with the rum-bottle.

SELECTION OF SEEDS.

CHOICE OF SEEDS.

When seeds swim on the surface of the water, it is an infallible sign that they are improper for vegetation; but still this vegetative proof is not sufficient to assure us that those which stand this proof are good, for they may notwithstanding be partly or wholly bad. To avoid all doubt, recourse is had to the following method: Put a small piece of cotton in a tub of water; put seeds in it, and place it in a proper exposure at the temperature of 20 to 25 degrees Fahrenheit.

The good seeds will soon germinate. This is always done by careful cultivators of the madder, the seeds of which are sometimes dear, and do not grow when old. One ought carefully to avoid seeds mixed with others—great cleanliness of seeds is important. And all this care does not secure us from bad seeds, because we know that vegetable maladies are sometimes transmitted through the seeds, as, for instance, the *corn charcoal*—the *Uredo Carbo*—a parasite plant which attacks the seed, alters its principles, and transforms it into a blackish powder; and a few grains of that powder escaping from a diseased plant is sufficient to infect others which are sound. The preventives of this malady are difficult, for the contact of diseased seeds with sound ones is infectious.

There are many opinions as to the quality of seeds. Must we choose the largest or the smallest? The ancients, Varro, Columella, and Pliny, advise as to grain, (the Cerealia,) to *select the heaviest*. By this they meant those seeds which are individually so, and not such as weigh most in certain quantities. Mons. Loiseleur Deslongchamps has shown that a hundred grains of the Leisette (a kind of wheat) of Provence, weighs 4 grammes 7.100, while the same Leisette cultivated near Paris weighs 7 grammes 74.100. We know that the weight of the hectolitre of this grain, in Provence, is from 78 to 82 kilogrammes, while that grown near Paris weighs but 76 to 78 do. Therefore the hectolitre of Leisette raised near Paris, contains 1,101,000 grains, and that of Provence 1,701,080 grains.

We avoid, reasonably, all wrinkled or shrivelled grains, for that announces that they are not well filled with flour. We admit none but well-filled grains, even if such be small. And do we then obtain as large straw and heads? Duhamel has affirmed that from small acorns and chestnuts we have as fine and as large trees as from the largest. He has shown that the size of trees of various kinds has no relation to the size of their fruit. He recommends only that the small acorns be gathered from the finest and largest trees during their middle age. Mons. Loiseleur Deslongchamps has put it out of all doubt that the choice of the largest seeds is of no importance for planting.

On the duration of the germinating power in seeds.—The strange discord prevailing on this subject, proves how little this matter has been studied. We

know, generally, that the seeds of luguminous plants have a very prolonged vitality. Mons. Girardin grew beans which had been preserved by Mons. Tournefort, after one hundred years had elapsed. We have cited an example from Thaer, who found under an old building earth which, being carried into his garden, produced *Golden Margarets*, which had never been seen in that vicinity. A great number of examples similar to this prove that the vitality of seeds does endure for a great number of years. On the other hand, nuts—hazel-nuts, almonds—hardly germinate after the first year. There are very few seeds of madder of the second year which will germinate. Wheat has been the subject of the greatest research in this respect. Pliny assures us that he had seen wheat germinate, which had been kept a hundred years. Howe speaks of barley germinating after having been kept one hundred and forty years. According to my observation, however, we rationally prefer planting seeds of the previous year. It is essential to keep seed-wheat spread so that it may be well aired, and to have fresh seed.

PLANTING OF WHEAT.

Mons. Moreau, of the North, formed 13 beds, each of which was planted with 150 grains at different depths, and the following table shows the results:

Depth.	Those which came up.	Heads.	Number of grains gathered.
7 inches	5	53	682
6 " and ½	14	140	2,520
5 " " ¾	20	174	3,818
4 " " ½	40	400	8,000
4 " " ¼	72	700	16,560
3 " " ¾	93	992	18,534
2 " " 3.5	123	1,417	35,434
2 " " ½	130	1,560	34,349
2 "	140	1,590	36,480
1 " " ¾	142	1,660	35,825
1 "	137	1,461	35,072
½ "	64	529	10,587
On the surface	20	107	1,600

THE FUTURE OF SOUTH CAROLINA AND OF THE SOUTH.

THE *Greenville Patriot* predicts for the future of South Carolina as follows:—

"We now predict that a new era has commenced in this State, and that the energies of her people will no longer be exhausted in a fruitless excitement and war with the Federal Government. Instead of boasting of our chivalry and spirit, and spending our time in idleness and profligacy, we will go to work and improve, enrich, and beautify our Palmetto State. We will build railroads, cut canals, make plank-roads, erect machinery, put up manufactories, improve our lands, construct magnificent public edifices, fine houses, and comfortable dwellings. We will endow schools and colleges, and look to the moral and social condition of our people, and make ourselves, not an independent *nation*, but an independent *people*. We will show our love for South Carolina, not by running off to some new country, but by living and dying here, and teaching our children to remain here after we are dead and gone. Instead of going to the North to spend our money and our summers, we will visit the mountains of our own beloved State, and build cottages there, and live there during the hot and sickly season. We will learn to manufacture and import our own goods, and raise our own horses and hogs, so that we may be neither dependent on the North or the West."

South Carolina will, we are here informed, make a market on the land for the products of her land; but why is it that such a work has so long been

deferred? Why is it that she is now almost to commence the work of building railroads, making plank-roads, erecting machinery, and putting up manufactories? Why is it that such things have not long since been done? The answer is simple. South Carolina has refused to accept for her citizens that protection against the monopoly power of Great Britain, without which the spindle and the loom can never be brought to take their place by the side of the plough and the harrow. She has advocated the Manchester system of political economy, which teaches that the way to enrich the farmer and the planter is to send from the land all the products of the land, first exhausting the soil, and then exhausting its owner, preparatory to "running off to some new country;" whereas, had she continued to believe with her Rutledges and her other men of the Revolution, that agriculture and manufactures must go together, she would have been steadily improving her soil, endowing schools and colleges, looking to the moral and social condition of her people, and teaching them "to show their love" for their native State by living and dying there, and teaching their children to remain there after they were "dead and gone;" and all these things she would have done, because she would every day have been more and more proving the truth of the theory, that *it is population that makes the food come from the rich soils, while depopulation drives men back to the poorer ones.* Truth is mighty, and it will prevail.

HENRY C. CAREY AND HIS WRITINGS.*

[WITH A PORTRAIT.]

THE science of Political Economy has never been properly understood. Indeed, we cannot see how any system of political economy could ever have been constructed, which, starting from the initial truth, whatever that might be, should follow out the vast and complex relations of man as a social being, and, boldly asserting its several propositions, should be completed by an application of profound philosophical principles to the higher, not less than the lower interests of nations. We say that we see not how any such system, which should embrace the broadest and most important absolute truths, could have been constructed; for the reason that the students and the teachers of political science have never been so independent of external influences as to leave them free to the higher and clearer perception of truths which a new age and a new social destiny could alone develop. As long as the central idea of any state is the perpetuation of the royal lineage, and the crown, and the splendor of the government, and the prerogatives of the nobility, and the usurpations of the aristocracy, to which all other ideas must be made to converge, (any other idea, in fact, being proscribed, and its author speedily appropriated to the guillotine, the halter, or the wheel,) just so long will the external circumstances of society, regulated and forcibly moulded by this absolutism, demand a system apparently philosophical, plausibly scientific, which shall accommodate truth to their own development and adjustment.

We assume nothing, and arrogate nothing, in this opinion. Philosophical systems, invented to accommodate themselves to political institutions, which,

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* A number of our subscribers having called for a portrait and sketch of Henry C. Carey and his writings on Political Economy, we comply with the request in this number of our Journal. We have good precedent for introducing "Our Contributors" to our readers, though we do not desire to do so, except when such a step is justified by the requests of our friends.

in their inception, their continuance, and their operations, are violations of Nature's perfect laws, and therefore wrong; systems invented to teach maxims which tend to the limiting of good to the few, and the distribution of burdens and pains among the many; systems which proceed on the assumption that war, disease, crime, insurrections, and the like, are Nature's escape-pipes to let off the press re of society, and other doctrines as monstrous as they are cruel, and as superficial as they are weak,—systems like these could never be true. With much of close observation, with much of truth obscured by error, with much of earnest reaching after the greatest good, the political economies of the past are defective, erroneous, false.

There is, however, this redeeming feature. The systems invented are measurably well adapted to the political institutions they are intended to support, and the interests they are intended to develop. But these institutions are all founded upon the "divine right of kings," and the legitimacy of the few, they being aggrandized to the fulness of a dazzling splendor, while the many are restricted, bound up, trammeled, and slain, at the will of the usurpers! This construction of society is false and unnatural, yet we are told by its apologists that it is imperatively demanded by the moral and intellectual condition of the people. When, however, we come to inquire into the past, we find that that condition is the result of perpetual wars, involving heavy taxation for the support of fleets and armies, and preventing the accumulation by its people of the means of physical, moral, and intellectual improvement, while the few who govern them are still further enriched by the very causes which oppress the many. The whole tendency of European political economy is to teach that the existing inequalities of condition are the results of laws established by an all-wise, all-powerful, and all-merciful Being. *War* and *waste* give power to the few, and helplessness to the many. The few are, therefore, always ready for war, while the many, among whom peace diffuses prosperity and happiness, are always the friends of peace. In a state of peace, the people are freest. Norway, the freest government in Europe, is that in which the people are the most peaceful, and the most capable of asserting their rights, and the best prepared for self-government. It is where armies are largest and most frequently used, the taxes are heaviest, and the people poorest and weakest, that the inequality of condition has its most earnest supporters as a result of divine laws; and to account for the existing facts, it is necessary to resort to the theories of Ricardo and Malthus, which aim to show that the inability to obtain food, or clothing, or education, results from a principle of population. Let the many be inspired by hope, enjoyed under free institutions, and the advocates of false constructions and despotic systems will learn that they are sufficiently capable of self-government, and that a people whose moral and intellectual condition is elevated, will be not less distinguished for their social position—their entire capacity for self-government, or political and individual freedom, being speedily demonstrated. The nearer a state comes to this conidition of moral and intellectual greatness and consequent equality of privileges, which constitutes freedom, the nearer it approaches TRUTH in its social mechanism and political institutions; and hence, any system of political science which develops most profoundly and clearly these principles, is obviously the nearest to absolute Truth. It requires no argument or illustration to show that philosophical maxims and theories, adapted to the former false conditions, are altogether unfit and useless, when applied to the latter condition, which is TRUTH, tangible and actual, in life and embodiment. The reasoning of the ancient philosophers, in regard to the four elements, fire, air, earth and water, in the degree of knowledge to which they had then attained, was

sufficient to carry them over many difficulties, but would be mere stupidity and positive ignorance, applied to our present advanced state of chemical philosophy. So in political economy. The progress of the world develops new circumstances, points to new truths, and quickens new investigations. The circumstances are not, indeed, so new as are the coincidences under which they come to us, and the truths are only old truths which false systems and institutions had buried and obscured. We want, then, a new and truer system of political philosophy than we can get from the past.

The Declaration of Independence, the Revolutionary War, the Constitution of the United States, and of the several States, embodied a class of truths, and made those practical and demonstrable, which had been only the abstractions and dreams of hopeful leaders of other times. The American Union has pressed onward with unparalleled rapidity in its path to wealth, extent of territory, population, productiveness, grandeur, and power; and the institutions of the country are, almost without an exception, eminently calculated to produce the present state of things in our land. What, then, is the central idea of our institutions? FREEDOM. Freedom is the position nearest to absolute truth in the social and moral relations of man; it is the true condition of a moral being. The principles and maxims of political science which have heretofore been taught, are found to be faulty, erroneous, defective, and often false. They belong to the past, to false and unnatural conditions of man,—conditions growing out of wrongs suffered, and injustice endured, and rights invaded,—and hence, they are not fitted to the genial, hopeful, progressive institutions of Freedom of to-day. How much less are they suited to the brighter fulness of to-morrow!

America having thus given birth to institutions unparalleled in the history of the world, and presenting a spectacle of national grandeur which is every hour swelling into more gigantic proportions against the western sky, it is natural that the principles and the laws which govern this development should come to be profoundly examined, and constructed into a system of political economy more in harmony with the truths which are the goal whither our institutions and destiny lead us, as well as the very basis upon which they rest. To denominate this system the "American School of Political Economy," is only to obey an instinctive impulse; and to give to its founder a high place among the most able and profound thinkers of the age, is to award what cannot be withheld. This position belongs to the gentleman whose name we have thus attempted to introduce to the reader.

HENRY C. CAREY was born in Philadelphia, Pa., in the month of December, 1793, and is, therefore 58 years of age. His father was the late eminent MATTHEW CAREY, of that city, whose name and whose virtues are embalmed in delightful and honored memories, in connection with the free and benevolent institutions and enterprises of his day. He was an able and practical writer, and his frequent contributions to the economical discussions of his time were important to the principles he advocated as a warm and faithful writer on the side of protection to our national industry. The senior Carey was a practical business man, for many years well known in the book-trade, and gave to his children a business education.

HENRY C., the third child, and the oldest son, formed no exception to this wise economy of the parent. At seven years of age he entered the book-store of his father, and there remained until he was twenty-one, when he became associated with him in business. On the retirement of his father, in 1821, when he was twenty-eight years of age, he became head of the firm of Carey & Lea, and afterwards of Carey, Lea & Carey. During this time he formed

a matrimonial alliance with a sister of Leslie, the painter. The practical and important truths to which Mr. Carey's mind had from time to time been drawn, during this and the former period of his life, determined him to investigate fully the various systems of political economy which had been proposed by former and contemporaneous writers; and on his retirement from business, he devoted the energies of an independent, acute, and philosophical mind to the vast field of the multiform interests of man, considered in their broadest, deepest, and highest relations.

The first volume from Mr. Carey's pen was published in 1835, and is entitled, "ESSAY ON THE RATE OF WAGES; *With an Examination of the Causes of the Differences in the Condition of the Laboring Population throughout the World.*" This work, which is but an index of the patient and persevering spirit of fearless investigation and bold grappling with the principles announced by his predecessors, which mark Mr. Carey's works, was soon afterwards expanded into and followed by "THE PRINCIPLES OF POLITICAL ECONOMY," which appeared in three parts, each forming an octavo volume, in the years 1837, 1838, and 1840. Part I. is devoted to "The Laws of the Production and Distribution of Wealth." Part II. discusses "The Causes which retard Increase in the Production of Wealth, and Improvement in the Physical and Moral Condition of Man." Part III. treats of "The Causes which retard Increase in the Numbers of Mankind." Part IV., contained in the same volume, is devoted to an examination of "The Causes which retard Improvement in the Political Condition of Man."

Contemporaneous with the publication of these "Principles of Political Economy," we may notice here an essay on "THE CREDIT SYSTEM IN FRANCE, GREAT BRITAIN, AND THE UNITED STATES," published in 1838, an octavo of some 130 pages, and "ANSWERS TO THE QUESTIONS: WHAT CONSTITUTES CURRENCY? WHAT ARE THE CAUSES OF UNSTEADINESS IN THE CURRENCY? AND WHAT IS THE REMEDY?" which latter bears the date of 1840.

Here the publications of our author rested for several years. But the ripened fruits of this period of seven years' study and labor were not long withheld from the public. In 1848, the thinkers and economists of the old, as well as the new world, were surprised with one of the most able and elegant, and at the same time broad and masterly productions of our day. It is in Political Science, what the great work of John Stuart Mill is in Metaphysics—original, thorough, and profound, the casket thrown far in advance which shall lead on the forces of progress to a more speedy conquest over their adversaries. "THE PAST, THE PRESENT, AND THE FUTURE," will stand as one of the remarkable books of our time. It was while developing the theory of Rent, as presented in this volume, that Mr. Carey became convinced that Protection is a measure of resistance to a system of oppression, a doctrine which immediately absorbed his whole attention, and the result of his labors was the work which next came from his pen. In the "HARMONY OF INTERESTS," the author devotes himself to a full examination of the laws which govern production and consumption, and the effect of protection in increasing capital, production, exchanges, and the reward of labor. He enters into a commercial history of our country for thirty years; past and under the various tariffs and changes which the tariff has undergone, he presents a mass of facts which demonstrate clearly the necessity and beneficent results of a protective policy. If we may attempt a brief statement of the author's views, they may be thus expressed: A protective tariff increases production and consumption, the demands for and the means of transportation, both internal and external, and accelerates the immigration of laborers from abroad; shipping grows with pro-

tection, because protection causes demand for labor; the laborer must be imported; and men being, so to speak, the most valuable commodity, the cost of sending the less valuable to market is diminished; in other words, the producer and consumer being placed side by side, each has a better reward for his labor, because the cost of transportation to market becomes greatly reduced. Or, as the author himself observes: "Between the interests of the treasury and the people; the farmer, planter, manufacturer, and merchant; the great and little trader and the ship-owner; the slave and his master; the land-owners and laborers of the Union and the world; the free trader and the advocate of protection, there is perfect harmony of interests; and the way to the establishment of universal peace and universal free trade is to be found in the adoption of measures tending to the destruction of the monopoly of machinery, and the location of the loom and the anvil in the vicinity of the plough and the harrow."

We have not attempted, in this brief statement of Mr. Carey's labors, to furnish a review of his facts or his principles. We have not designed to undertake such a task. In briefly announcing the various productions of our author, we aim to make our readers better acquainted with the labors of one whom we are privileged to number among the contributors to "The Plough, the Loom, and the Anvil." The fame of these labors is not confined to our own country. In Europe, Mr. Carey's works are ranked among the richest and most valuable acquisitions which political science can boast; and the appropriations made from them by foreign writers show the power of his reasoning and his facts in gaining pupils from among the leading minds in Europe. The use made of Mr. Carey's publications in European schools, and the fact of a translation having been made into Swedish, where they are the text-books of the Royal University, and that they are about to be rendered into French, is a proud triumph, and entitles the author to the distinction which has been accorded him: "*The Apostle of the American School of Political Economy.*"

We cannot close without noticing that special feature of Mr. Carey's system which is so marked throughout his pages. In it is the justification of the principles with which we commenced this sketch. Mr. Carey is eminently a man of PEACE. Having ever viewed FREEDOM as the true condition of a moral being, whatever tends to make him the subject of external and unnatural restrictions, we regard as antagonistic to his true and highest interests. WAR, whatever be the pretext, aims to restrict or to destroy entirely the freedom of one of the belligerent parties. War disturbs the operation of those great laws which give permanence, prosperity, and consequent happiness to a nation. It disturbs, embarrasses, and checks or suspends production, and, inevitably, exchanges and commerce. It is, therefore, a death-blow to the capacity of the people to improve their condition. It creates debt. Debt creates taxation. Taxation depresses production by the burdens it imposes upon the laborer and producer; and in the measure in which production is depressed and wronged, centralization throws the wealth of a nation into the hands of a minority; for the greater the restriction on the producer, the less is his power to resist the tendency to centralization; and hence he becomes a mere half-paid or worse oppressed machine, by which nobles and nabobs, princes or patroons may cause him, in hopeless endurance, to

"Bleed gold for ministers to sport away!"

There is scarcely a nation in Europe which does not present this picture at the present time—certainly no nation which holds a position of any influence in the affairs of the world. Hence, we think our position as a nation is a new

one in the world's history. Having asserted our freedom, and paid off the debt created in its purchase, we have pursued a path which has led us to unrivaled prosperity. The war of 1812 was occasioned by an attempt to restrict our freedom. The evils growing out of that war were many, and the perturbations and restrictions were universally felt; but they were overcome, and the debt created was paid. The first bold violation of our constitutional law of PEACE was the war of Texas-annexation and Mexican dismemberment, —the first imitation of that policy which has characterized the nations of the old world. The consequences of that disturbance of our economy would have been immeasurably more disastrous than they were, but for the discovery of gold just after the partition of Mexico, and the acquisition of an immense territory. A system of Political Economy, therefore, which arranges and demonstrates the principles of the science on this truer basis of FREEDOM, and of PEACE, which is its consequent, is demanded by the spirit of our institutions and the wants of our age. Old systems, formed from the bloody materials of the past, the debris of violent convulsions, and the exuviæ of the mediæval night, relieved by the first impulses of a struggle for a better day, are not the basis upon which the future or even the present statesmen of America should erect their institutions.

In the "Essay on the Rate of Wages," Mr. Carey uses the following language:

"Had the laws which govern the rate of wages, and the effect of the various disturbing causes which prevent the action of those laws, been properly understood, wars could never have been popular. Mr. M'Culloch says with great truth, that 'the laborers are masters of their own fortunes, and that there is little reason to hope for any great improvement until they shall be made to understand correctly the laws which govern the rate of wages, and the fact that it rests with them to determine what that rate shall be. Had they understood them, they would have seen that a state of peace was that in which they must prosper most, and would have been indisposed to join in a pursuit that might bring them 'glory,' but that would inevitably deprive them of a part of their bread and meat. Had they been understood by those who are in 'high places,' and upon whom rested the cares of government, they would have seen that the prosperity and happiness of the people, in which would consist their own true glory, were not to be promoted by empty triumphs, nor by the addition of barren islands to their already extensive possessions. They would have seen that peace alone could do it; and had they done so, they might perhaps have retained the same intimate connection with this country that once existed, with an intercourse unfettered by corn laws on the one side, or the system of minimums on the other; and the people of Great Britain, instead of groaning under the pressure of taxation for the support of the government, the land-owners, paupers, and monopolists, might now be the happiest and freest from taxation of any nation in the world. It is, indeed, impossible to imagine the height of prosperity which she might have attained, had she kept aloof from the intrigues and contentions of the Continent during the last century, as she might well have done; and had the thousands of millions expended in paying men for carrying muskets been left in the hands of their owners, to be applied as they might judge most likely to conduce to their comfort and advantage. Unfortunately, however, the triumphs of peace are little valued; and Sir Robert Walpole, who could maintain a peace for twenty years, is little thought of when compared with the elder Pitt, whose first wish was for extended territory, and who is best known for carrying the nation triumphantly through a war; and the names of Alexander and of Cæsar are familiar to thousands who never heard of Antoninus, or of Marcus Aurelius."

"THE PAST, THE PRESENT, AND THE FUTURE," is radiant with this beautiful and holy philosophy. In a subordinate heading it is called "THE LESSON OF THE PAST TO THE PRESENT;" and we will here close with a few of the inculcations of this new and lovelier reading of the political science of our age.

"The PAST says to the sovereign of the PRESENT: 'Avoid war! It diminishes population and wealth and union, and it tends to reduce nations into tribes.

Its apparent grandeur is real littleness. It destroys the power of self-protection, in which consists real greatness.'

"To the representatives of land it says: 'Avoid war! It destroys population and wealth and the value of land is dependent upon the growth of both.'

"To the laborer it says 'Avoid war! It destroys wealth more rapidly than population. It diminishes your power over the product of your labor, and it tends to increase the existing inequality of condition."—*Man and Food, p.* 93.

"The PAST says to the landlord of the PRESENT: 'If you desire that your lands become valuable, yielding large rents, labor to promote the maintenance of peace.'

"To the tenant it says: 'If you desire to become the owner of the land you cultivate, labor to promote the maintenance of peace, and to prevent the waste of wealth in fleets and armies.'

"To the laborer it says: 'If you desire to own your house, and lot, and garden, your own shop, or your own farm; to have your own wife and children; to read your own books and newspapers; to go to your own church; to send your children to your own school; and to see them prosper in an active world, where rapidly increasing wealth gives increased wages to a rapidly increasing population, labor to promote the maintenance of peace and economy.'

"To the nation: 'If you desire to acquire, individually and collectively, the power of perfect self-protection, avoid war and preparation for war.'"—*Wealth and Land, p.* 156.

In the close of the eighth chapter, in which "*Man and his Helpmate*" are considered, the following are given as the "Lessons." May they soon become the universally taught and received principles in every land!

"The PAST says to the sovereign of the PRESENT: 'If you desire that woman should occupy the position for which she was intended by her Creator, cultivate peace.'

"To the landlord it says: 'If you desire that your lands shall become valuable, avoid war, and permit wealth to increase, that woman may be chaste, and population grow.'

"To the laborer it says: 'If you desire that the honor of your wife and daughter be respected, labor to promote the maintenance of peace.'

"To woman it says: 'If you would be a happy wife, mistress of your own home, and surrounded by your children, love those who cultivate peace.'"

Let the maxims of HENRY C. CAREY be taught in our high schools and in our common schools, in colleges and universities, from the platform and by the press, and the beneficent and immeasurable results of such teachings will be seen in a progress the world has never witnessed, and a destiny of which poetry could never dream. Expressed in one sentence, we may learn that while sin is a reproach to any people, the exaltation of a nation is "RIGHTEOUSNESS."

W. O. B.

RESULT OF EXHAUSTING THE LAND.

THE PASSION FOR CITY LIFE.—Another cause, operating against the farm, is the supposed superior respectability and emolument of other pursuits, acting as a continual drain on our agricultural population. The young man, toiling in homespun, sighs for the joys of broadcloth and fine linen; and his visions of earthly bliss bring before him, not the green fields, with trees, and flowers, and the singing of birds, and the murmur of bees, and running brooks, and all the beautiful sights and sounds of his daily life; but his imagination dwells on paved streets, and brick walls, and muddy streams of gutters, and

the rattle and din where men herd and jostle one another. His beau ideal of life is to pass it in a dingy office, where the blessed sun never enters; to "achieve greatness" in the foul air of a court-room; to feel a consciousness of importance and patronage where humble greetings and the lowly reverence of obsequious money-dealers tell who is noted on "'Change." He thinks of the opulent city, and numbers up those whose ability or wealth has built them up a name, and originated many a fable for country circulation, stirring up young ambition to shake off, not the dust of the farm only, but the shoes themselves; to jump from caterpillar to butterfly, without any intervening chrysalis; to enter into that state of beatitude which erects a standard of gentility on the disdained or forgotten occupations of early life.

The above passages are extracted from an address before the Norfolk Agricultural Society, by George R. Russell, to which we shall again call the attention of our readers; and we could wish that our space would permit us to give it to them in full, as it abounds in matter well worthy of their consideration.

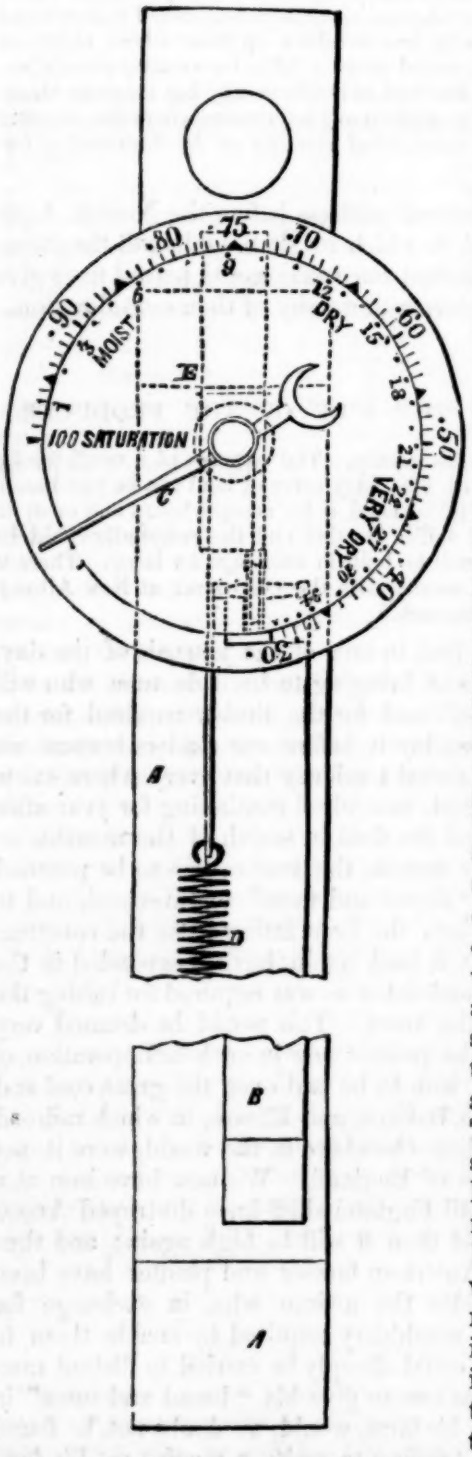
BRINGING THE CONSUMER TO THE SIDE OF THE PRODUCER.

"Two great lines of traffic run through the county. The expense of a small family from New-York need not exceed $25. With $50, forty acres of land can be purchased, and a willing hand can get work in any neighborhood, if he accepts bread and meat in payment. Three days in the week would suffice for this, and the remainder could be devoted to the farm. The log-house also will be built in exchange for labor. There is a railroad within 30 miles, connecting the county with the Ohio river at New-Albany. The timber is oak, poplar, beech, hickory and ash."

The above is from a letter that we find in one of the journals of the day, written by a Western farmer desirous of bringing to his side men who will exchange labor for "bread and meat," and for the timber required for the construction of "a log-house;" and we lay it before our readers because we desire to call to their attention the natural tendency that every where exists towards bringing the mouth to the food, instead of continuing for year after year, and century after century, to send the food in search of the mouths.

According to the British monopoly system, the true course to be pursued by this farmer would be to send his "bread and meat" to Liverpool, and to send with it his timber, to be hewed into the form fitting it for the construction of the log-house, and then to get it back again, having expended in the work of transportation four times as much labor as was required for raising the corn and the wheat, and for felling the trees. This would be deemed very absurd, yet it is not more so than is the process now in such full operation, of sending food to England to purchase iron to be laid over the great coal and iron ore regions of Pennsylvania, Ohio, Indiana, and Illinois, in which railroad iron could be produced at less cost than elsewhere in the world, were it not for the perpetual changes in the prices of England. We now have iron at a low price, and it will continue low until England shall have destroyed American competition in its production, and then it will be high again; and thus it is, and always has been, that the American farmer and planter have been prevented from bringing to their sides the artisan who, in exchange for "bread and meat," could furnish the machinery required to enable them to convert their cotton into cloth, which could cheaply be carried to distant markets. The writer of this letter, so anxious to give his "bread and meat" in exchange for the labor required upon his farm, would, we doubt not, be found opposed to the adoption of measures tending to make *a market on his land for all the products of the land*, enabling him to improve his land and to grow rich himself. The time, however, cannot be far distant when he will awake to the fact that in making that market he will be contributing toward the establishment of *perfect freedom of trade.*

PORTABLE HYGROMETER.



The use of the hygrometer for horticultural purposes (in which its principal value is found) has long been known and applied; but, from the want of sufficient sensitiveness on the part of the instrument, or imperfection in its construction, its advantages have not been fully realized. To remedy these defects, Mr. E. L. Simmons, of Coleman street, London, registered, in 1847, what he terms "Simmons' Portable Hygrometer," which has proved, as we learn, a very valuable instrument; an illustration of which we have appended, for the benefit of our horticultural readers. It is so simple in its construction, that any one may avail himself of its benefits. It not only shows at sight the humidity of the atmosphere in decimal parts of the saturation, but furnishes an instantaneous means of ascertaining the dew-point. A is a back-piece, of metal or glass; B, a long thin piece of wood, with the grain running in a transverse direction to its length, which is made fast at the lower end to the back-piece A, and connected at its upper or free end to the axis of the index hand C of the dial-plate E, on the face of which the decimal parts are engraved; and D is a spiral spring, which is secured to a bracket projecting from the back-piece A, and connected by a cord to the axis of the hand C. The constant tendency of the spiral spring and cord is to keep the index-hand at what may be called its normal state; while the piece of wood, being elastic, expands and contracts with the increase or diminution of moisture in the atmosphere; and, as it contracts or expands, draws the index-hand round in one direction or the other. The dew-point is ascertained by subtracting the number under the index-hand from the temperature of the air at the time, the remainder being the dew-point, or the temperature in degrees of Fahrenheit corresponding to the quantity of moisture in the atmosphere.

SCIENTIFIC AGRICULTURE AND RELIGIOUS PROSPERITY.

BY REV. WILLIAM CLIFT, STONINGTON, CONN.

It is a superficial view of agriculture, to regard it as isolated from other employments. Every lawful calling is linked with every other, and contributes its share to the general good. Man can do nothing worthy of his manhood, that will not make the race happier and better. This connection between the varied occupations of men is more obvious in some cases than in others. It is generally acknowledged that religion lies at the bottom of social prosperity. The reaction of secular business upon religion is generally overlooked. Stagnation in the former is incompatible with thrift in the latter. A parish where all earthly interests droop, where the husbandman, the mechanic, and the manufacturer alike fail of success, is not likely to see piety increasing. The man that is nerveless and disheartened in the prosecution of secular enterprises, will find it very difficult to "be fervent in spirit, serving the Lord." In his straitened circumstances and poorly remunerated toils, how hardly shall he "devise liberal things for Zion," whether at home or abroad!

There are parishes in New-England, once able and self-sustaining, now so impoverished, by lack of skill and enterprise in business, that they have lost the ability to support gospel institutions among them, without foreign aid. Whatever may be the moral disposition of the people, they lack the pecuniary means to pay a minister's salary. That many, if not most, of our rural parishes are waning in numbers, wealth, and influence, is generally conceded by intelligent men, without any statistical knowledge of the fact. The most cursory observation shows it. The extent to which this decrease has gone on would probably surprise any one who has not had his attention particularly called to this subject.

In the August number of the *Home Missionary*, we find the following account of the Congregational parish in Bolton, Ct.:—

"The time has been when this church needed not the aid of sister churches. Here were men of wealth, enterprise, and energy, who unitedly labored in the cause of Christ, and honorably sustained divine institutions. In the year 1722, they made ample provision for the support of a pastor, and were in a condition to command the best talent in the ministry. They had able ministers; and, in the early history of missions, this church contributed annually to the Connecticut Missionary Society, not having the most remote idea that it would ever be a suppliant at the door of the Home Missionary Society."

"The causes of the decline in piety and enterprise are not without some interest. Bolton included the larger part of Vernon for thirty years after President Edwards accepted a call here; but it was comparatively an unimportant part of the town. Its streams ran noiselessly through tangled forests; while Bolton Centre was a place of business, occupied by men who were princes in the land. Orford, then a waste place in East Hartford, was dependent for pasturage and bread upon this fertile mountain. Now, Vernon contains three, and Orford—under the name of Manchester—two Congregational churches, and each the same number of other evangelical denominations, and they are all golden candlesticks; while Bolton church, the mother of them all, sits solitary as a widow, dependent on charity, for there are none among her sons and daughters to guide her. They are gone, some among the leading men of several of these churches; more are scattered all the way from this

to California, promoting, as we hope, the kingdom of Christ. 'She that hath born seven languisheth.' Our most enterprising and energetic youth go from us every year, to swell the population of the villages around us, or to lend an impulse to the tide which is bearing the institutions and the civilization of the Puritans to the Pacific.

"It is not more certain that the living springs, gushing from our mountain sides, will send their contributions to drive the machinery in the lower towns, than that our youth will be there to guide the spindle and the loom. The consequence is, that real estate has been depreciating here for fifty years; and the poor, who will pay small rent, or buy only on lower terms than in any of the neighboring towns, can find a home among us. They who have the means to emigrate, do so, and our number lessens every census, though not so fast as our valuation, for poverty comes like an armed man."

Such is the graphic description of an agricultural parish by its present pastor.

By referring to the census returns, I find the population of Bolton in 1810, 700; 1830, 744; 1840, 739. The proportion of agriculturists to manufacturers is 164 to 23, showing the main business of the town to be farming. The statistics of the census of 1850 are not at hand; but if they were, they would probably show no substantial increase for the last forty years. The following table of towns in New-London county shows the same state of things in other parishes:—

	Pop. in 1810.	Pop. in 1830.	Pop. in 1840.	Farmers.	Manufacturers.
Waterford, -	2185	2477	2329	695	131
Lisbon, -	1128	1166	1052	564	41
Franklin, -	1186	1194	1000	794	19
Montville, -	2187	1972	1990	1187	98
N. Stonington,	2524	2840	2269	1661	196

It is believed that there is no exception to this state of things in any agricultural parish in Connecticut; for these figures do not show the full extent of the decrease in such parishes. These towns include villages where manufactures flourish, and which increase in population; but, notwithstanding such increase, the towns, as a whole, show no large addition to their population for the last half century. Such parishes have not the population, the wealth, or the influence they had fifty years ago.

To every good man, these examples of unthrift and decline are sad spectacles. They are contrary to the genius of Christianity, which not only "makes the wilderness bud and blossom as the rose," but keeps the wilderness it has reclaimed in perpetual luxuriance.

The decline of our agricultural parishes is too often regarded as hopeless. Go into any of them, and converse with that class of farmers who take no agricultural paper, and, while they concede the fact that their lands are less productive than formerly, they propose no remedy. Is there no help?

Certainly it ought not to be so; for the right use of every thing that God has made improves it, while man's works only wear out in the using. Mind improves by use, and is broken down only by neglect or abuse. The soil is as much God's workmanship as mind. Use it rightly, and it will not only never wear out, but always improve. There is no good reason why the soil should not every year increase in riches and in its capacity to produce aliment for man and beast. Any usage that does not secure this result is an abuse of one of the works of God.

The natural working of the soil, under the influence of light, heat, and

moisture, secures this result. The decay of vegetation on wild lands, every year increases the mould and all those elements of fertility which future generations of plants will require. It should be the office of human tillage to increase the action of these natural agencies, and to hasten the process of amelioration. We should come to this conclusion upon general principles, were there no science to demonstrate its truth. The soil would be an exception among all the works of God, if it were run down by legitimate use. But agricultural science shows us beyond all cavil that good tillage, while it gives the amplest rewards, improves most rapidly the capacities of the soil for future fruitfulness.

If these principles are correct, it is quite manifest that far the greater part of the husbandry of our land is a flagrant abuse of one of God's gifts. It is wearing out the soil and dissipating the inheritance of future generations with reckless prodigality.

Says Dr. Lee, in the Patent Office Report on Agriculture for 1849 and '50 :—"Of the twelve million acres of improved land in the State of New-York, one million are so cultivated as to become richer from year to year. These improving soils are in the hands of forty thousand cultivators, who take and read agricultural journals, and nobly sustain the State and County Societies of that commonwealth.

"Three million acres of the twelve million are so managed as barely to hold their own in point of fertility. These lands belong to a class of persons who do as well as they know from personal observation, and seeing how reading men improve their estates and domestic animals.

"Eight million acres are in the hands of three hundred thousand persons, who still adhere to the colonial practice of extracting from the virgin soil all it will yield, so long as it will pay expenses to crop it, and then leave it in a thin, poor pasture for a term of years. Some of these impoverished farms, which seventy-five years ago produced from twenty to thirty bushels of wheat per acre, now yield only from five to eight bushels. In an interesting work, entitled 'American Husbandry,' published in London in 1775, and written by an American, the following remarks may be found on page 98, vol. I. :—'Wheat, in many parts of the province, (N. Y.,) yields a larger produce than is common in England. Upon good lands about Albany, where the climate is the coldest in the country, they sow two bushels and better upon an acre, and reap from twenty to forty; the latter quantity, however, is not often had, but from twenty to thirty is common ; and with such bad husbandry as would not yield the like in England, and much less in Scotland. This is owing to the *richness and freshness* of the land.'

"According to the State census of 1845, Albany county now produces only seven and a half bushels of wheat per acre, although its farmers are on tide-water, near the capital of the State, with a good home market, and possess every facility for procuring the most valuable fertilizers. Dutchess county, also on the Hudson river, produces an average of only five bushels per acre; Columbia, six bushels; Rensselaer, eight; Westchester, seven; which is higher than the average of soils that once gave a return larger than the wheat lands of England, even with bad husbandry.

"Fully to renovate the eight million acres of partially exhausted lands, in the State of New-York, will cost at least an average of twelve dollars and a half per acre, or an aggregate of one hundred million of dollars. It is not an easy task to replace all the bone earth, potash, sulphur, magnesia, and organized nitrogen in mould consumed in a field which has been unwisely cultivated fifty or seventy-five years. Phosphorus is not an abundant mineral

any where, and his subsoil is about the only resource of the husbandman, after the surface salt has lost most of its phosphates. The three hundred thousand persons that cultivate these eight million acres of impoverished soil annually produce less by twenty-five dollars each than they would if the land had not been injured.

"The aggregate of this loss to the State and the world is seven million five hundred thousand dollars per annum, and more than seven per cent. interest on what it will cost to renovate the deteriorated soils. There is no possible escape from this oppressive tax on labor of seven and a half millions of dollars, but to improve the land or run off and leave it.

"That the latter has been done to a large extent, is shown by comparing the population in rural districts at the census of 1830 with that of 1840. In nearly half of the towns in the State, population has decreased, notwithstanding the rapid growth of cities and villages, demanding an increase of farm laborers to supply the mere local markets."

This curse of depopulation and poverty, which follows the abuse of the soil, is not to be wondered at. Every good which God has given us has its laws—must have them—to guard it against abuse, and preserve it for the happiness of future generations. Retribution follows the violation of these physical laws in this instance. The soil, as if indignant at the treatment it receives, spews out the population that fail to enrich and improve it, as the stomach rejects all unwelcome intruders that it cannot use to replenish and build up the system.

What, then, is the remedy for these wasting agricultural parishes? They are so numerous, in all the older States at least, that the question is one of public importance, and demands the attention of even philanthropists and Christians.

We answer, the remedy is not mere preaching or moral appliances of any kind. The poor wise men in our pulpits, though more largely the benefactors of the public than any other class, will find an evil here that the ethics of no school in theology will directly meet. Were their readers

> "All ear,
> And took in strains that might create a soul
> Under the ribs of death,"

they could not make of them flourishing congregations. The souls are not there to be converted. There is not capacity in the wretched husbandry that prevails to sustain them and make them an energetic and thriving parish, if they were converted. Religion corrects the maladies of the heart. It does not promise directly to remedy defects of mind, or to reform the bad results of a wrong mental training. Piety will not give a man the results of experience and business tact. It will not directly make a man a better farmer. But finding a farmer or mechanic intelligent in his business, it will furnish him with new motives for its vigorous prosecution, and teach him to make a wiser use of his accumulations.

There is a physical rather than a moral cause for many of these spiritual wastes and waning parishes in New-England, and there must be corresponding appliances to remove the evil.

The one thing wanted to renovate the soil and to bring back prosperity to these parishes is scientific agriculture. This will make husbandry as profitable as other callings, and will change it from dull plodding and drudgery to a business of intelligence and taste. The aspiring sons of our New-England farmers, finding employment for mind as well as muscle in husbandry, can

easily be retained at home to improve and adorn this heritage of the Pilgrims.

Here is the appropriate field of labor for our agricultural journals; and the man who shall succeed in putting these upon the farmer's table, beside his newspaper and his Bible, will have done a good work for the farmer, a good work for society and religion. The farmer does not believe it now, but as he reads and practises, he will believe it, that with the same labor and expense his crops may be increased to thirty, sixty, or an hundred-fold; that the same sterile acres which now starve their hundreds, and eject as a burden all the natural increase of population, are capable of supporting their thousands in joy and plenty.

Disseminate agricultural knowledge in every family, and a new era will open upon these rural districts. A remedy will have been found for a great evil; the chief embarrassment of many parishes will have been removed, and their pastors cheered and strengthened in their work.

PROSPECTS FOR WOOL GROWING IN AUSTRALIA.

THE recent discovery of gold in Australia has been followed by the abandonment, to a considerable extent, of the sheep culture of Australia, and great numbers have, as it is stated, already been exterminated. The subject is exciting considerable anxiety in England, and, as it is one that must affect the prospects of the wool-growers of this country, we lay before our readers the following remarks upon the subject, which we take from an article in the *London Times*:—

"In California, the discovery of gold was made in a country where society was as yet rude and unformed, and no branch of industry had been cultivated with any degree of prominence or success. The new State is the creation of the gold mines, and its population consists, not of inhabitants of the country who had relinquished their regular occupations for this more attractive pursuit, but of persons drawn from every quarter of the earth, and whose absence from their respective communities was, in many cases, felt to be a relief rather than a burden. The case of the Australian colonies (for this purpose they may all be considered as one) is as different as can possibly be imagined; besides the usual occupations of agriculture, they have, as every body knows, become a field for pastoral enterprise on a scale of unequalled magnitude. The sheep, which constitute their principal wealth, are divided into flocks varying from four hundred to a thousand in number, each of which is intrusted to the care of a single shepherd. Two of these flocks are generally driven together to the same station, where a third person resides, whose duty it is to change the hurdles, and watch the sheep by night. The country being infested by wild dogs, it is absolutely necessary that some one should always be present with the sheep, in order to protect them from this cause of destruction, and the force required for this purpose is about three men to every twelve hundred sheep. Now, in the year 1848, the number of sheep in New-South Wales and Port-Philip exceeded eleven millions six hundred thousand, not to speak of the flocks of South Australia or Van Diemen's Land. It is not, probably, unreasonable to calculate that, in the three years which have elapsed since this return was made, the number of sheep has increased to at least fourteen millions. This enormous amount of property exists from day to day, by virtue of the unceasing care and attention bestowed upon it by the shepherds, under a rigid system of central superintendence; without that care, it could not exist for a single week. Now, let our readers imagine the effect which must be produced on the mind of the proprietors of these fourteen millions of sheep by the information that a gold-field has been discovered, which is certain to attract away from their existing engagements every shepherd and hut-keeper in their employment. It will be vain to attempt to retain them by offers of increased wages. One employer of labor may compete with another, but who can bid against the imaginary riches of an Eldorado, in which every adventurer expects to find a splendid fortune impatiently awaiting his acceptance?

"Nor is this all. The shearing of the sheep, which takes place about the month of October, is an operation not generally intrusted to the shepherds, but to persons who

travel round the country for the purpose. Shearing cannot be long deferred in Australia without ruin to the fleece, from the presence of a seed of a particular grass, well known to the purchasers at our wool sales. If the fleece is not shorn before November, it is very greatly deteriorated in value. Now, those professional sheep-shearers are exactly the persons who, from their itinerant way of life and reckless habits, will be the first to swell the ranks of the gold-finders. . . . . One of our great branches of manufacture has suffered considerably by the scarcity of its raw material—cotton. The woolen manufacture is threatened with similar peril by the events which menace the very existence of those flocks upon which we depend for the supply of the finer descriptions of wool. The only means of averting this calamity is to protect private property in New-South Wales, by enabling the Government immediately to assert its dominion over the public lands. These considerations are so obvious that we cannot doubt they will ultimately be attended to. What we principally urge is the imperious necessity of the utmost despatch, arising from the perishable nature of the property in jeopardy, and the danger only too likely to arise from the desperate character of that penal population, which is sure to meet for the first time in large and uncontrolled masses on the gold-fields of Australia."

From another of the journals of the day, we take the following:—

"Immense flocks, left by the shepherds to be devoured by wild dogs, are being killed by thousands, and boiled down for tallow. Many proprietors, it is stated, have been compelled to dispose of twenty thousand sheep in this way. As wool has hitherto been the great staple of the colony—the main reliance of the majority of settlers, and an article on which merchants have been accustomed to make large advances—there are not wanting writers who draw gloomy pictures of the ruin which will, in their judgment, follow this infraction of the ordinary course of affairs."

VIRGINIA AND HER INTERESTS.

We give below the conclusion of a letter from an eminent Virginian, to which we earnestly invite the attention of our readers, and particularly that of those of the Southern and Western States; for what is here said of Virginia is equally applicable to each and every one of them. Concentration is essential to the progress of agriculture, for it is essential to the development of intellect; and the result of such development is always exhibited in the discovery of new modes of action and new machinery with which to act. The existence of the reaping machine is due to the dissemination of education among our people; and it is needless to say that schools are better and more easily maintained where men are enabled to combine their efforts and live together, making a market on the land for its products, and thus improving their land, than where combination of action is rendered impossible by reason of all being engaged in the single pursuit of agriculture, and where the soil is exhausted by sending all its products to be consumed in distant markets, followed by the exhaustion of its owners and the abandonment of the land. What Virginia needs is combination of action; and that cannot be obtained until she shall awake to the fact that her farmers and planters need protection against the British monopoly system, which looks to compelling all the agriculturists of the world to make their exchanges in British markets, and which covers monopoly under the mask of free trade.

"Every body in England now wonders that a machine [McCormick's reaping machine] at once so simple and so effective, and so precisely adapted to the wants of British agriculture, should never have been invented and brought to perfection by some of their own people, and that it should have been reserved for a modest inhabitant of the mountains of Virginia, more than three thousand miles distant, to conceive and execute and bring to them what so exactly suited them, without their having been able previously to form a distinct conception either of its nature or its practicability. What renders this the more extraordinary (and it is a circumstance which greatly enhances both the merit and the glory of the American invention) is, that the minds of the most ingenious mechanicians in

Great Britain had been earnestly directed to the same object; for the catalogue of the Exhibition registers no less than eight different but very imperfect essays towards its accomplishment. My own observation last year, at the annual meeting of the Royal Agricultural Society of England, convinced me that a good reaping machine was the great *desideratum* in British agriculture. In the immense and almost infinitely diversified collection of agricultural implements displayed there, no instrument of that kind was seen; and yet it was evident that in a climate so humid and uncertain, some accelerated and at the same time economical process of getting in their harvest was a matter of the highest importance. I immediately wrote to our friend, C. J. Meriwether,—as he will, doubtless, recollect,—that if the 'Virginia Reaper' were sent out to the Great Exhibition of the next year, for which the arrangements were then commencing, it would make the fortune of its inventor. It has not only done this, but it has *reaped a harvest* of honor and renown for himself, his native State, and the reputation of American genius in general, which is a result far more to be prized.

"With this encouraging example before us, are we not strongly invited to some change in the direction which has been heretofore so exclusively given to the youthful talent of our State? As soon as our young men leave college, they crowd by hundreds into what are called the learned professions, which are already filled to repletion, or they devote themselves to a still more sterile and unprofitable employment of their faculties, both for themselves and the country, in mere party politics. If the same amount of mind and energy were applied to those useful practical pursuits in which science is the auxiliary of art in indefinitely multiplying the results of labor and unfolding the latent capabilities of nature, what a magical change would soon be manifested in the prosperity and power of our ancient Commonwealth, rich, as all admit her to be, in every element of moral, intellectual, and material wealth!

"In reflecting upon this subject, as I often do, with a solicitude ever alive to the honor and destinies of my native State, I have thought that some modification of the systems of education pursued in most of our public schools would greatly contribute, and is perhaps indispensable, to introduce the change which appears so desirable in the active direction of our mental resources. Could not that education be made more *practical*, without abating any thing from the high standard of science and learning which should characterize it, simply by giving more development to the *applications of science* to the various branches of industry and art, as is done in the admirable institutions of this country, the *Ecole Polytechnique*, the *Ecole des Ponts et Chaussées*, the *Ecole des Mines*, and the *Ecole Centrale des Arts et Manufactures*, from which England, with her usual sagacity, has taken a hint in the establishment of her 'Government School of Mines and Science applied to the Arts,' not being able to engraft those new studies upon the ancient and *chartered* systems of her universities? Whether the object is to be accomplished with us by some modification in existing institutions, or by the establishment of new and special institutions, is a question on which I am not prepared to pronounce an opinion. Those who are more competent than myself, recognizing the utility of the end, will, I trust, devise the proper means; and my prayers will be for the success of whatever they shall adopt, as they ever are for the happiness and prosperity, in all things, of my native land.

"Most truly and faithfully yours, W. C. Rives."

MINERAL RESOURCES OF THE WEST.

The *Galena Advertiser* gives an account of a discovery of lead ore, which promises to surpass any thing of the kind on record. It was made about two miles north-east of the Linsipheur Mound, is two miles distant from any other diggings, on a farm in the prairie, and was made by a boy finding mineral in a creek. On examining the bottom of this creek, it was found to be almost a solid mass of lead ore for some ten or twelve feet in width. Some three or four holes have been sunk about four feet in the clay, on each side of the creek, and specimens of large block mineral taken out, weighing from fifty to one hundred pounds. The ore lies between the clay and rock, forming a horizontal floor, and has been proven on one side of the rock for fifteen feet in width. The farm and discovery is owned by Messrs. Snyder and Turner, of Dubuque.

Scarcely a day elapses that brings not with it some new discovery of great mineral wealth, or rather of what would be wealth could the farmers and planters of the country awaken themselves to the fact, that combination of action is essential to their prosperity, and that the agriculture of no nation has

ever flourished when the loom and the spindle, the hammer and the anvil had not taken their places by the side of the plough and the harrow. Iron ore abounds throughout the Union, and limestone abounds, and coal abounds; and food so much abounds, that the farmers are every where storing their grain for want of a market in which to sell it. The warehouses of our cities are, nevertheless, groaning under the importation of food in the form of iron; for the whole value of iron consists in the labor expended in producing it, and nearly the whole value of the labor consists in the food consumed by the laborer. Lead abounds throughout the West, and from week to week we hear of new and great discoveries of it, and here we have one that is said to surpass any one as yet recorded; and yet from year to year the export from the West of food, in the form of lead, diminishes, when it should so rapidly increase! We beg our western readers to study the following facts, and then decide for themselves if it be not time that they should require of their representatives to aid in the adoption of a policy that tends to make a market on the land for the products of the land:—

ARRIVALS OF LEAD IN NEW-ORLEANS.

Tariff of 1842.		Tariff of 1846.	
1843,	571,000 pigs.	1847,	630,000 pigs.
1844,	630,000 "	1848,	606,000 "
1845,	732,000 "	1849,	508,000 "
1846,	785,000 "	1850,	415,000 "
		1851,	325,000 "

We have here an increase of forty per cent. under a system that affords encouragement to the laborer to come to the West, and there to eat food while making lead; and a diminution of almost sixty per cent. under a system which teaches that the farmer must send his food to Great Britain, there to be exchanged for lead, or keep it at home, because unable to sell it at any price that will not be ruinous to him.

That, however, is but half the story. The man who mines lead in the West consumes potatoes, and turnips, and milk, and veal, and a thousand other things that will not bear carriage to distant markets, many of which are wasted when a near market does not exist; and the refuse of what he eats goes back upon the soil, to aid in maintaining it in its power to produce food; and the farmer finds that the more lead he is able to buy, the more wheat he has to sell; whereas the man who mines lead in Cornwall eats the potatoes and the veal and drinks the milk of England, while the farmer of the West exhausts his land in raising wheat with which to purchase the little lead he is enabled to consume, and then he flies to other lands to be again exhausted; at every step increasing his distance from market, and diminishing his power to get to it, and rendering it more and more necessary to mortgage his farm for the purchase of iron with which to make roads by which to reach it.

REMARKS ON VETERINARY MEDICINE, &c.

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I PROPOSE in the following pages to present a few remarks on the subject of Veterinary Medicine, and will take as the basis of my comments a translation which I have made from the transactions of the French Academy of September, 1851.

The subject of Veterinary Surgery is one that, in my opinion, has not as yet

commanded that attention in our country which its importance demands. The amount of property invested in horses alone is very great, and attention to their diseases will, doubtless, be worthy of the political economist.

In 1847, according to statistics given in the first volume of "Styker's American Register," the total number of horses, mules, and asses was 5,289,510. At the average price of twenty dollars apiece, this number costs $105,790,320. If we admit that two thirds of these are horses, each valued at fifty dollars, we have the sum of $206,317,200 invested in horses alone.

It is a notorious fact, that at the same time that the horse is the most expensive machine or animal which is used in society, the losses from disease, accidental and natural deaths, are greater than those of any other animal. The diseases are simple, but fatal, chiefly on account of the want of medical skill on the part of those who have the care of the horse. Who are our veterinary surgeons? Generally a few intelligent farmers and blacksmiths, who pick up their information from the observation of such diseases as are presented in their immediate neighborhood.

The mere fracture of a leg involves the loss of a horse worth five hundred dollars. Why can we not have a veterinary college in one of our cities, in which intelligent men would be educated for the responsible duties of the practice of medicine among horses and other animals?

But we must return to our translation: "M. Magendie presented to the Academy of Sciences, in the name of the Minister of War, the third volume of Memoirs and Observations on Military Veterinary Hygiene and Medicine."

This work, published at the expense of the Government, is compiled by the commission termed Hippic, instituted by the Administration of War, many members of which are also members of the Academy. M. Magendie presides over the commission. This volume contains—1. An analysis of the veterinary reports of the army on hygiene and medicine, during the years 1847 and 1848. 2. Special works of the veterinary surgeons of the army. 3. Annual concours—pieces honored with medals or mentioned honorably. 4. Experimental studies of the Hippic Commission. 5. Documents published by the Administration of War. A few words on each of these subjects will present their character and value.

Annual Reports of the Veterinary Surgeons of the Army for 1847 *and* 1848.—Like those which have been analyzed in the preceding volumes, these volumes contain a great number of interesting observations. How can it be otherwise? Sixty-six thousand horses have formed for several years the effective force of the French army. These animals are daily examined by men of experience and intelligence, and there result, consequently, a multitude of curious and interesting remarks. Of this, I will cite those which relate to the animal loss.

The tables of mortality established for age, sex, army, province, and disease, demonstrate many remarkable and unknown facts. For example, they indicate the dépôts of breeding which furnish good and bad horses. In reference to the total losses, these tables demonstrate that they were, in 1847, $\frac{62}{1000}$; and in 1848, $\frac{52}{1000}$; a result desired and pleasant to see. But alongside of this amelioration, so profitable to the interests of the country, the reports of the veterinary surgeons present a fact of quite a different character: one half of the horses experience diseases, more or less serious, during their stay at the dépôts; $\frac{32}{1000}$ die, and $\frac{13}{1000}$ must be renewed. We remark that these losses take place before the young horses are sent to the corps, and that, consequently, they are independent of those which result from transportation and delay at the regiment, before entering the ranks. This state of things appears to exist

to the present time. The Minister of War has also directed that investigations should be made in reference to the causes of disease and death in young horses during their stay in the dépôts or in the corps, before passing to the squadron; besides this, the commission of Hippic-Hygiene has received the mission of examining whether the regimen to which the horses recently introduced are subjected has any bad influence on their health. This inquest, which is now in process of execution, will, we hope, have a happy influence on an evil which should be remedied immediately.

Although these veterinary reports are of great utility, yet they might be made more so. The questions, for instance, might each year be changed so as to embrace a great number of subjects. It is equally desirable, for the proper making up of these reports, that the physical and chemical sciences were more familiar to the veterinary surgeons, and that more liberty were allowed them in their labors.

To give an idea of the manner in which these reports are made up, the commission of Hygiene think it proper to print them *in extenso*. We will thus be able to judge of the merits and defects of these compositions, as well as the duties they are called upon to render to science and the administration of war.

Many of them (the surgeons) resort to heroic treatment, both in bleeding and the use of medicines. It is desirable that a more severe scrutiny be made into the cases reported cured. It is not sufficient that a patient should be well after a certain treatment, to conclude that the treatment cured him. Such a conclusion is only admission after proof that he would not get well from certain hygienic regulations. In leaving a certain number of patients affected with a given disease to the resources of nature alone, and in comparing the number of cures with those which follow medication, the relative value of medical treatment might be arrived at. Should the first be found the best mode of treatment, it would be a great saving to the state.

Special Labors of the Veterinary Surgeons.—Ever since its appointment, the commission on Hyppic-Hygiene has invited the veterinary surgeons to communicate freely with it, in order to improve science. Many distinguished men have responded to the call. This volume contains two memoirs, one by M. Laisné, senior veterinary surgeon to the 7th Regiment of Artillery, on the mode of curing certain lamenesses by means of the cautery alone; the other by M. Gillet, senior surgeon to the stables of the dépôt for new horses at Alençon, on the Equine races of the department of the Orne, one of the localities where heretofore the best horses were procured. These works each contain, in their specialty, the following observations and studies, which clear up several doubtful questions in hippology. The memoir of M. Gillet has appeared so valuable, that, on the proposition of the commission of Hippic-Hygiene, a medal of gold has been decreed to the author by the Minister of War.

Annual Concours among the Veterinary Surgeons of the Army.—By ministerial direction, an annual concours is held among military veterinary surgeons. The question proposed in 1848 was: On the races of horses in France, in the remontes or dépôts of the army. Only one memoir was written on the subject. This work of M. Mariot, veterinary surgeon attached to the dépôt of Tbesdin, contains interesting details on the qualities of the Morine or Boulonaise race, also a curious statistical account of this useful race. I regret that this was not known to General Lamoricière when he compiled his remarkable report.

Experimental Studies of the above Commission.—The commission has

terminated its experiments on the use of marine salt in the daily ration of the horses of the army, followed for two years, and applied to more than three thousand horses of the army; the experiments afford striking results. It is demonstrated that marine salt introduced into the food, affords no advantage to the health of the horses; that it does not preserve them from diseases, especially from the acute and chronic glanders, farcy, &c.; the same thing may be said in reference to fattening war-horses. The experiments prove, without doubt, that the salt has no effect in these respects.

The commission has also stated that the use of marine salt in very large doses has no bad effect upon the horses; this substance, when thus given, passes off by the urine, increasing the proportion of urea. It has been proved that locomotion in trotting or galloping is favorable to digestion, and a horse that is in action digests more than one at rest. Experiments have also been made on the effects of the secretion of the parotid glands of the horse, compared with those of mixed saliva.

DOMESTIC PRODUCT OF IRON.

In 1846, Mr. Walker stated that the domestic product of iron was 850,000 tons; and that of 1847 undoubtedly considerably exceeded that of the previous year, as the country was then highly prosperous, and the demand was greater than the supply. In four years after, it had fallen to 564,755 tons, as is shown in the following return, under the late census:—

State.	Capital.	Tons.	No. hands.	Wages.	Produce.
Pennsylvania,	$8,570,425	285,702	9,285	$2,115	$6,071,513
Ohio,	1,503,000	52,658	2,415	2,448	1,255,850
Maryland,	1,420,000	43,641	1,370	2,127	1,056,400
Tennessee,	1,021,400	30,420	1,713	1,282	676,100
New-Jersey,	967,000	24,031	600	2,120	560,544
Kentucky,	924,700	24,245	1,845	2,023	604,037
Missouri,	619,000	19,250	334	2,428	314,600
New-York,	605,000	23,022	505	2,496	597,920
Virginia,	513,800	22,163	1,115	1,267	521,924
States under half million,	1,202,100	39,623	1,516	....	1,089,889
Total,	$17,346,425	564,755	20,298	....	$12,748,777
Value raw material and fuel,				$7,005,289	
Wages, rate of $421,435 a month,				5,057,220	
					$12,062,509
Apparent net profit, equal to 3.96 per cent. on capital,					$686,268

At that date, very many furnaces still continued to struggle on for existence, their owners hoping for a change of policy, a hope that has been since abandoned; the consequences of which are seen in the fact that the domestic production has since fallen to little over 400,000 tons. The diminution in the market for the products of the earth, resulting from this decrease in the product of pig iron alone, amounts to more than eight millions of dollars; and that amount might be far more than doubled, were we to carry our inquiry into the refining and manufacture of the iron; whereas, had the tariff of 1842 remained unchanged, we should have increased the quantity to a million and a half of tons, and thus have made an additional market on the land to the extent of forty or fifty millions of dollars. The same cause that produced, from 1842 to 1846, an increase in the domestic production amounting to more than 600,000 tons, would have given us in the years that have since elapsed a similar increase; and

the same causes that enabled us to increase in that time our total consumption of domestic and foreign iron from 300,000 to 950,000 tons, would have since enabled us to increase our consumption to the quantity we have named—to wit, a million and a half of tons—and we would now be laying our roads with iron, the produce of the food and wool of the North and South, instead of storing the wheat and giving bonds for the iron. It is surely time that the planters and farmers should understand that they it is that need protection in their efforts to bring the consumer to the side of the producer, and thus enable themselves to save the cost of transporting the food to the mouths, by bringing the mouths to the food.

SKINNING WOODLANDS.

No practice is more repugnant to the farmer than skinning woodlands, and in some localities it should be so. But there are many farms, part of which is low, and only used as woodlands, where both the woods and the farm might be materially improved by skinning the woodlands. In many woods, the continuous growth of centuries has deposited a coating of leaves, which has been protected from entire decomposition and consequent departure in the gaseous form, by shade and moisture. In such cases, the accumulation has been greater than the current growth of the woods could re-use as pabulum. Such woods may be skinned with profit, for they contain a quantity of *leaf-mould, worth more than an equal bulk of barn-yard manure*, and which is packed so tightly that the atmosphere is excluded from entering the soil. Around many an old chestnut stump, from which in turn a dozen or more trees have been cut, may sometimes be found a load of leaf-mould, which, often being loosened by the grubbing-hoe, is light and redundant with inorganic value; and many an acre of woodland will furnish one hundred cords of wood, earth, and leaves, and still retain more leaf-mould than the current requirements of the soil will need for future growth of woods. A few years since, we were employed to visit a farm and advise modes of culture, where the farmer insisted that he had no muck or any other substance, from which he could make compost with his stable manures. His cleared land he valued at $100 per acre. Standing on the high land of his farm, we observed that the land sloped from every direction toward twenty acres of woodland located at the lowest point, and in the very centre of his farm. We asked him the value of his woodland, beyond the wood it then contained, and he replied, as the land was wet and cold, he supposed $20 per acre was all it was worth; and wanting muck he had looked at this twenty acres for twenty years, without ever supposing it was proper to *skin it* for composting; indeed, he at first objected, on the ground that it would injure the land; but when assured that it would give 150 loads or more per acre of good material for making compost, and worth seven times the value of the land after removal to his manure shed, he ventured to take the matter into serious consideration. He has since taken off the surface of the woods, soil to the depth of a few inches, and in the deeper parts to the depth of a few feet, developing the fact that the fertile portions of the high lands had washed down and buried his trees beyond the proper depth. This removed mass of leaves, leaf-mould, and fertile soil, has been composted and added to his fields, rendering them fertile; while the drier portions of his woodlands have received, after being skinned, a coating of lime, not one tenth the cost of the value of the removed leaf-mould, and both the woods and the farm are increased in value.

We have tried this system most fairly on our own farm, and the skinned

woodland is not inferior to the parts not so treated; but, on the contrary, the wood on the skinned portions, by the help of the lime added, far surpasses that of the adjacent portions not so treated, and the current growth of wood is materially improved.

But suppose, for sake of argument, that the woodland was destroyed by such treatment, still we should be largely the gainer, for the leaf-mould has been worth much more to us than the value of the woodland.

The true value of woods-earth is much greater than is supposed. The roots of trees travel in the soil to great depths, and there receive, year after year, the soluble inorganic portions of the subsoil, bringing them to the surface and forcing them into organic shape, as leaves, twigs, &c. One ton of these leaves, when dry, contains more inorganic matter than is held by any short-rooted crop grown on a similar area of land. In the fall, these leaves are deposited on the ground, accumulating until, after a series of years, the soil is deepened many inches, from constituents of the subsoil deposited as dry leaves on the surface soil. Nor is the deposit altogether of inorganic origin, for a lofty wood arrests gales, and the moist atmosphere, entering within its boundaries, is robbed by the leaves of growing trees in summer, and by the carbonaceous surface of the soil in winter, of its ammonia, carbonic acid, &c., and thus the organic as well as the inorganic accumulations are very great. Many woods are not browsed by cattle, and these accumulate leaf-mould rapidly, when situated in fertile districts, the atmosphere of which is at all times filled with the results of decayed vegetation; and even when an old woods is browsed by cattle, the accumulated surface-soil has the rare power of receiving and of retaining their excretiæ more pertinaciously than when voided in open pastures.

Who does not know that an old woods, before being skinned, is sometimes so surcharged with leaf-mould as to refuse clover and other grasses, even in the more open spots, and when skinned and limed, at once come naturally into such growths as are valuable pasturage for cattle? Be not afraid to skin a wood for a leaf-mould, when it will yield one hundred loads per acre, and is not worth, beyond the value of the wood, more than $100.—*Professor J. J. Mapes.*

FLAX COTTON.

The annexed notice of the progress of the arrangements for the production of flax cotton, taken from an account of the late New-York State Agricultural Fair, can scarcely fail to have interest for our readers of the planting States, and we desire to call to it their special attention. Southern policy has *driven* Southern labor almost exclusively into agriculture, for it has looked to the separation of the spindle and the loom from the plough and the harrow, the consequence of which is, that all the cotton-spinning machinery of the world is now located in the flax-growing countries of the world, which latter are now engaged in a vigorous effort to throw off all dependence upon the producers of cotton; and that effort will be successful, and that at no distant period, if it be not so even at this moment. What, then, will be the condition of the planter! Even now he is almost ruined, when his crop reaches two and three quarter millions, and even the prospect that such may be the size of the crop has reduced the price to an average of little more than thirty dollars per bale; but let the present movement be perfectly successful, and there will soon be added a million of bales of flax to take the place of as many bales of cotton, and then even twenty dollars a bale will be considered

a high price. We entreat our Southern friends to study well their prospects, and to determine for themselves if their security against such movements will not be greatly increased by adopting the measures necessary for bringing the spindle and the loom to their own cotton fields, and thus making a market on the land for the products of the land.

"Nothing, however, arrested our attention in this hall but the specimens of flax-cotton and its various proportions, exhibited by E. G. Roberts, assignee of Claussen's patents for the United States. We saw one intelligent, influential citizen converted from skepticism to enthusiasm for flax-cotton by his first earnest examination. It *will* go inevitably. A cotton fibre scarcely distinguishable from Sea Island may be produced from flax by Claussen's process for six cents per pound; and a machine for breaking out the fibre from the unrotted stalk was exhibited by Mr. Clemmons, of Springfield, Massachusetts, which is calculated materially to expedite the flax-cotton revolution. This machine renders the entire fibre, with hardly a loss of two per cent. as "swingle-tow," straight, and wholly separated from the woody substance or "shives," at a cost which can hardly equal one cent per pound of dressed flax. Its operation is very simple, and any man who has seen it work a day may manage it. Its entire cost is from $125 to $200, according to size. It will be a shame to American agricultural enterprise if flax-cotton and linen are not both among our country's extensive and important products within the next three years."

UNSEASONED FUEL.

BY PROF. JAMES J. MAPES.

If farmers would ask themselves why charcoal will answer a better purpose than wood for melting iron, they would understand by analogy why well-seasoned wood is more economical for fuel. If charcoal be slightly moistened, it will be found to have no superiority over wood for any use as fuel. Three cords of green or partially seasoned wood will not warm a room for as great a length of time as one cord well dried, and entirely free from moisture. The rationale is simple, and, although to be found in books, is nevertheless true; it may be thus understood: "Substances contain heat as latent in proportion to their bulk." Thus, if we pour a cubic inch of alcohol on our head, and then fan it, the one cubic inch assumes the form of vapor, and becomes seven hundred cubic inches, capable of receiving a proportionate amount of heat, and therefore takes heat from the nearest hot object, *the head*, causing it to be cool. Water placed on the head and then rapidly evaporated, will cool the head from the same causes. It may now be understood that a single pint of water, contained in a piece of wood thrown on the fire, will first become one thousand seven hundred pints of vapor, and that this vapor will increase in size one five-hundredth part of its bulk for every degree of heat added, so that it travels up the chimney, carrying with it as much air as would warm all the air in a large room for a considerable space of time.

Let any farmer weigh a green and a dry stick of the same size, and he will be convinced that a very moderate-sized stick may have an extra weight of eight pounds, and therefore contain one gallon of water. If an iron network be placed over a wood-fire, and a number of shallow pans upon it containing water, so that a large amount of vapor is constantly rising, this vapor will so perfectly absorb the heat generated below, and carry it up the chimney, that the heat radiated in the room will be too slight to warm it, and similar effects must take place from the use of green or only partially seasoned wood. Indeed, wood may be rendered just sufficiently moist to permit its burning without radiating any useful quantity of heat in a horizontal direction into the room. Many suppose that green wood may be burned in stoves with profit. This is also an error, for the vapor will pass up the pipe, carrying with

it the heat, and prevent its being received by the iron and radiated into the room.

With these facts in view, should not every farmer provide a dry place for fuel, and have a stock at least sufficient for a year's supply always on hand?

The use of air-tight stoves throughout the country is diminishing the consumption of wood, and the supply of potash to the soil is comparatively decreased. These peculiar kinds of stoves will lessen the bulk of ashes by leaving them for a longer time than is usual in ordinary stoves; and indeed, so large a portion of the lighter part is carried off by the currents of air and smoke, that the remaining portion is nearly *pure potash*, and should be dissolved in water before application to the compost-heap. Large air-tight stoves will burn peat peculiarly well; and indeed, if rapidly filled and provided with a valve to shut off their connection with the chimney at a proper time, they may be emptied every morning of a bulk of *peat charcoal* equal to their size, and highly valuable both as a fertilizer and a deodorizer.

REGULAR FEEDING.

System and order are highly requisite in the care of domestic animals, and it has been laid down as an important rule by the most intelligent herdsmen, to feed and water cattle at fixed times, and the same hour and minute every day. It is found that when fed thus, they learn to expect their fodder at the stated time, and remain quiet and uncomplaining until it comes around. "Complaints from his stock," says Stephens in his Book of the Farm, "should be distressing to a farmer's ear; for, he may be sure, they will not complain until they feel hunger; and if allowed to hunger, they are not only losing condition, but rendering themselves, by discontent, less capable of acquiring it."

This is true of all domestic animals, and should be heeded by the farmer. Let him so arrange his labors at the barn that every operation may be performed at a stated time, and he will find matters to go on much more comfortably and pleasantly than when all is left at hap-hazard, without system or regularity.

INTERESTING FACTS.

Professor Johnston, in the course of lectures delivered by him before the New-York State Agricultural Society, stated that in this climate the temperature rises to 100° Fahrenheit five feet below the surface, and to 140° half an inch below it—facts which he says he learned himself with surprise. He uses them to illustrate the economy of nature in promoting vegetation.

The sunbeam is composed of three distinct and separate rays, one of heat, one of light, and one called the chemical ray. These three agencies exist in different proportions in the sunbeam in the spring, summer, and autumn. The blue or chemical ray is greater in the spring; the light greater in the summer. The chemical ray is less in autumn, and then the heating ray predominates. The proportion of these rays varies in different seasons of the year, in order that the growing plant may arrive at maturity. It has also been ascertained that the proportions of these agents vary in different climates.

It has been ascertained that the flower of a plant absorbs more heat than the other parts, and the dark more heat than the light; and hence it is inferred that the color of a flower is what determines the quantity of heat it requires, and the amount which nature supplies. It will be found that the soil and the plant contain nearly the same substances, the only one not in the plant being *alumina*. The mechanical function of alumina in the soil is to anchor the plant. Its tenacity is its available property. Some plants grow in mere sand, but the great majority of them require a certain degree of tenacity in the soil, which is obtained by mixing silica with clay. This alumina does not enter into the plant, but only gives to the soil the tenacity necessary to sustain the plant.

NEW BOOKS.

The Religion of Geology and its Connected Sciences. By EDWARD HITCHCOCK, D.D., LL.D., President of Amherst College, and Professor of Natural Theology and Geology. Boston: Phillips, Sampson & Company. 1 vol. 12mo, pp. 511. 1851.

The telescope of Herschel, as it revealed the countless multitudes of "glowing globes with varied being fraught," scarcely brought within the reach of human knowledge wonders more startling or novel than has the microscope or the chisel of the geologist. The stars in the blue depths are but as metaphors of immensity, so unreal to our finite comprehension seem those vast distances by which we are separated from the nearest of the fixed stars. Yet, when we turn to the pebble at our feet, the power of the telescope is demanded inversely, and we open into a world, the individuals of which are so small that hundreds of millions of perfect chambered shells, once inhabited by living beings, are brought to view in the compass of a single cubic inch of stone.

Materialism is ever ready to grasp at any fact or theory, no matter how crude or doubtfully established, as a weapon against Revelation. Geology, like astronomy, not permitted to disclose facts and establish laws and principles, is prematurely dragged into the contest between the Atheist and the Christian; and a science which is just now gaining a broad and comprehensive basis is alternately defended or attacked with as much earnestness as though the superposition of rocks or the problem of an elevated fossil were to decide the question of the divine origin of the Scriptures.

The work before us is the latest publication on the theological questions involved in the science of geology. Other writers have treated ably of these topics, but there are very few names which equal that of Professor Hitchcock, as authority in questions of religion and geology. He brings to his subject the maturity of thirty years' study of the science. He engages in the work with the enlightened mind of a scholar and the zeal of a Christian. Candid and just to opponents, he gives the views of others a free statement, and advocates his own with learning, ability, and force. This work is the best discussion of the relations of geology to Scripture yet published, and is worthy the distinguished reputation of the author. The folly of such works as the "Vestiges of Creation," the Lamarckian development theory, and the other hypotheses which Materialists have attempted to erect into a system of natural science, is clearly and ably exhibited in the arguments of Professor Hitchcock. The faith of the earnest Christian, the learning of the scholar, the practical and theoretical in the acquisitions of a diligent observer and philosophical laborer, all lend their value to these profitable and interesting pages.

Ollendorf's New Method of Learning to Read, Write, and Speak the Spanish Language. By M. VELAZQUEZ and T. SIMMONNE, Professors of the Spanish and French Languages. New-York: D. Appleton & Company, 200 Broadway. 1 vol. 12mo, pp. 558. 1851.

A Key to the Exercises in "The New Method," &c.

The name of Ollendorf, author of "The New Method of Teaching the German and French Languages," has become inseparably connected with the system which bears his name. We shall not attempt to decide here in regard to Ollendorf's pretensions to originality in his "method." For many years, and before Ollendorf had become known as an eminent teacher, Manesca in our own city had pursued the same course, of which he was the author, and, as stated by a distinguished American writer, the original exercises he had himself written under Manesca's courses in this city, were taken by him to Europe, and there shown to Ollendorf, who forthwith produced his "New Method." Whatever may be the claims, however, of one or the other to the originality of the system, the name of Ollendorf has been given to it, and it is a distinction of which he may well be jealous.

The grammars of Ollendorf are in universal use all over Europe and this country. They are the most complete and critical, and at the same time practical guides to the acquisition of a foreign language ever published. They commence with the simplest of phrases, in which an article, a verb, and a noun or pronoun can be used, and gradually amplifying at each successive step, the rules of construction are fully and familiarly laid down, and illustrated with numerous examples, in which the *idioms* are also explained and made available to the learner. By almost insensible steps, the student is carried from one point to another, so that, on the completion of a thorough course by this method, he has gained a valuable knowledge of the language, scientific and idiomatic, which is a full preparation for practical use, either in conversation or reading. These works are sufficient to enable the student to acquire the languages without a teacher; and, indeed, one of the best features of the method is its adaptation to the purposes of self-education. We can only join in the general meed of praise which has been awarded to this system.

The Appletons are rendering an important service to this country by their publication

of Ollendorf's method, applied to the Spanish, and an English-Spanish grammar, for the use of Spaniards. The German, French, Spanish, Italian, and Latin have now been placed on their catalogue, while their valuable Lexicons, comprising the labors of distinguished scholars in the Old World and the New, afford all the aid a student can desire from such sources. We are glad to know that the public are not blind in their appreciation of these publications.

Winter in Spitzbergen. A Book for Youth. From the German of C. Hildebrandt. By E. Goodrich Smith. New-York: M. W. Dodd. 18mo, pp. 300. 1852.

This is a very interesting juvenile, containing, in a series of fire-side conversations between a father and his children, a lively and graphic view of Spitzbergen and its winter. The thread of the narrative is a story of two young men and the pilot of their vessel, left on Spitzbergen. The geographical and historical information contained in the story makes it as instructive as it is entertaining, and it will, no doubt, serve to beguile the winter evenings of a large circle of American youthful readers.

Philosophy of the Mechanics of Nature, and the Sources and Modes of Action of Natural Motive Power. By Z. Allen. New-York: D. Appleton & Co., 200 Broadway. 8vo, pp. 800. 1852.

We have just received from the publishers a large and very handsome octavo volume, bearing the above title, which discusses boldly and thoroughly the systems of physical science as hitherto understood, and particularly the laws of natural motive power. Electricity, Galvanism, Heat, Attraction, Cohesion, the chemical forces employed in the infinite changes in the organic and inorganic worlds, and all the other dynamical agents which have been made known in our philosophy, are elaborately investigated. The recent publication of the work has precluded the possibility of a perusal, yet the many passages we have read satisfy us that this treatise is the production of a profound and independent thinker, who is not overawed by the names of the brilliant discoverers and philosophical teachers of our own or the past ages, but, taking the facts they have discovered, and the truths they have taught, he aims to reach a position still higher, and nearer the central sun of all truth. The author regards the sun as the source of power; and perhaps we cannot do better than to define the basis of his system in his own words. In the preface, he says:—

"By tracing out the continuous propagation of the solar action upon terrestrial matter, throughout successive modifications of static and dynamic conditions of groupings of atoms into fuel, food, steamy vapors in the sky, crystals, &c., it admits of demonstration that all the preceding 'Inherent Forces' and 'Imponderable Agents' are resolvable simply into '*the propagation of mechanical action through the medium of electric matter.*'"

On page 25, the author observes: "No appropriate term having been introduced into scientific language, to denote the continuous propagation of the dynamic action of the sun to terrestrial matter," he adopts the term *electro-dynamic action of the sun*, to express this action. There are two kinds of *natural static conditions*, fluids and solids, the natural and fixed groupings of certain atoms, while the changes undergone and the combinations produced by the forces employed by nature, are the *constrained static conditions.*

In examining the vast numbers and varieties of organic bodies, the author says that naturalists do not affirm an equal number of kinds of matter. But when the chemist finds about sixty *groupings of atoms* in the inorganic world, exhibiting sixty differently modified grades of power of propagating action, affirms that there exists an equal number of kinds of simple elementary atoms. On page 71, the author observes:—

"These considerations lead us to believe that the First Cause has seen fit to endue about sixty specific kinds of groupings of atoms of inorganic formations with sixty specific grades of powers of modifying, reciprocally, in directions between their respective centres, the propagation of the *electro-dynamic action of the sun*, in accordance with the similar system of the endowment of about a dozen kinds of groupings of the same atoms into organic formations of the mechanisms of vegetable and animal bodies with hundreds of thousands of different specific kinds or grades of powers of modifying continuously the propagation of the same electro-dynamic action of the sun. This plan establishes a perfect harmony between the systems of inorganic and organic formations."

The discussion is broad as the wide field upon which the author has entered; and the results of long and laborious investigation are easily discoverable in this work. As a philosophical production, it will doubtless find numerous readers. The author's system will doubtless be fully discussed in other scientific journals.

CORRESPONDENCE AND EDITORIALS.

PRESERVATION OF RIPE FRUIT.—About the season when the Madeleine pear is ripe, (in July,) I expected a friend, who I knew would be delighted with the taste of this fruit. He did not, however, arrive until the fruit (which you know lasts only a few days) was nearly gone. I gathered, notwithstanding, a few good specimens, and putting them into a dry, covered, tin vessel, surrounded this with ice, where it remained for two weeks. This, so far as I am aware, was an original experiment, and I knew not, therefore, how it would succeed; but on the arrival of my friend, the cover being removed, I was not a little gratified as well as surprised to find that the fruit had undergone little or no change, several of the pears being still hard, while those which were fully ripe when put into the vessel had not decayed.

As the success of this experiment was wholly beyond my expectation, I have since tried it on other fruits, as early peaches and summer pears, with equal success. I see no difficulty, therefore, in presenting our friends on the other side of the Atlantic specimens of our finest pears and peaches, if they are enclosed in dry tin or glass vessels, and placed in the ice-house of the ship. My experiments, however, have been only with small quantities of fruit, the vessels holding each but one or two quarts, as a common tin pail with a tight cover. If you think this new and worth knowing, please insert it.—J. L. COMSTOCK, *Hartford, Conn., Sept.*, 1851.

PANICUM MILLIUM, (MILLET.)—As an increase in the number of agricultural products of the country, millet is worthy of culture, and may come in along with the products of the field and garden to increase the variety of the farmer's productions. The millet, above mentioned, says the *Western Agriculturist*, is little known in the United States. I found it quite extensively used in Wisconsin by the Germans, as a substitute for rice, after being hulled; and it appears to be very nutritious and palatable when cooked the same as rice. I procured some seed, to ascertain if it could be raised to advantage in Ohio. It was sown about the first of May, at the rate of half a bushel of seed to the acre. By the tenth of July it was ripe and harvested. It requires to be cut as soon as the seed is ripe, as it falls out of the head very much if left standing too long. From what experience I have, I suppose it will yield from twenty to twenty-five bushels to the acre. It grows about two feet high, and has a head like broom-corn. The stem and leaves are hairy, or what botanists call pubescent. Cattle are not fond of the straw.—S. LAPHAM, *Mt. Tabor, Oct.* 13, 1851.

POULTRY CHEAPER THAN PORK.—MR. EDITOR:—Allow me to say a few words in your paper in behalf of that much-neglected class of stock that are usually found upon a farmer's premises without "a local habitation," if they have a name. They are not thought worth enough to have quarters of their own, and so shift for themselves upon the first fence, tree, or out-house that affords rest to their feet. Even in these days of hen-fever, and of feathered stock imported from the farthest Ind and beyond, there are thousands of farmers who have no shelter for their fowls better than an apple tree or open shed. "The merciful man is merciful to his beast;" and it would be a good lesson for the improvident owner of these abused bipeds, if he could exchange places with them for one December night, when the thermometer stands below zero. The sty must have a place, and the grunters be made comfortable, with a waterproof roof and a warm bed; for pork cannot be made to good advantage without proper attention. Pork-growing is a main reliance to pay the rent or the hired hands. Poultry is more plague than profit, and the less care bestowed upon them, the better. We intercede for the "biddies," and beg for them a little of the attention that is lavished upon their more gross and less attractive neighbors. Give them a fair trial, and they will pay any farmer for his care much better than pigs, and will supply his table with greater luxuries, and at a cheaper rate. And to establish this position, we will tell you a tale, quite as literally as some others founded upon fact.

In the year 1850, my poultry yard cost me—

In stock, - - - -	$39 96
In food for fowls, - -	39 81
Total, - - - -	$79 77
It produced in eggs, - -	$34 92
" in manure, - -	5 00
In stock at close of year, -	50 00
Total, - - - -	$89 92
Deduct expense, - -	79 77
Profit, - - - -	$10 15

It produced above this profit, 91 chickens and fowls, weighing about 300 lbs. In other words, the yard paid about 3 cents a

pound for all the poultry used in the family. When did a porker ever pay you for the privilege of eating him? Even Charles Lamb's roast pig will have to knock under to the biddies.

In 1851, my yard cost me—	
In stock, - - - - -	$54 50
In food, - - - - -	65 56
Total, - - - - -	$120 06
It produced 268 dozen eggs,	$48 76
" 5 loads manure,	5 00
Stock on hand at the close,	113 00
Total, - - - - -	$166 76
Deduct, - - - - -	120 06
Profit, - - - - -	$46 70

Besides this profit, it produced sixty-one fowls, weighing about 200 lbs. In other words, it gave twenty-three cents per pound for the privilege of being eaten. Was roast pig ever so gracious as this? We have tried pork-growing for the same two years, and dealt as liberally by the sty as by the poultry-yard, but with a very different result. The account stands thus:—

Bought a pig, May 13, 1850, -	$4 80
Food, - - - - -	15 02
	$19 82
Deduct for 8 loads manure, -	8 00
	$11 82

He produced 258 lbs. of pork. Divide the cost by this, and it gives a little over 4½ cents a pound, as the cost of production.

Bought a pig June 13, 1851, -	$4 95
Food, &c., - - -	13 56
	$18 51
Deduct 8 loads manure, -	8 00
	$10 51

He produced 206 lbs. of pork. Divide the cost by this, and it gives a little over five cents per lb. as the cost of production.

He must be a very skilful farmer who can produce pork for four or five cents a pound. Most of the pork made in New-England costs six or seven cents, the full market price; so that there is no advantage in producing it, except as it makes a valuable manure upon the farm. The farmer who can make pork for nothing, or, what is better, can make it pay him thrice its market value for being eaten, is a man yet to be heard from. The best husbandry will probably never be able to accomplish this with any breed of pigs.

But the fowls will pay their own way, with proper care, and will give you a certain amount of poultry without other cost than your own trouble in rearing them. Each hen, well cared for, will yield a clear profit of at least $1, or, in other words, will give you eight pounds of poultry for nothing.

We say, then, especially to the boys, take care of the "biddies." Let them have a warm place for a roost, a dry cellar, if possible, in winter, a variety of grain and a little animal food, clean water to drink, and lime in some shape, for egg-shells. Take care of the fowls, and they will take care of you.—W. C., *Stonington, Conn., Dec.* 31, 1851.

Stabling Milch Cows, &c.—Good stables are good things; but it does seem that sheds might be arranged in such a manner that cows would do as well in them, in the winter season, as they would, were they to be stabled in dirty stalls. No one can disacknowledge the fact but what it requires a great deal of hard labor, in the course of the winter and spring, to clean out and supply stables with bedding, &c. Where sheds are commodiously arranged, and built in a way so that the cold winds will be broken off, and abundantly strewed with straw, cattle cannot help doing well, if provided with enough hay, &c. To tell our own experience: we have tried stabling cattle for several years, and continue to do so yet, but have come to the conclusion, from observation, &c., that those cattle which run in the yards, around the straw stacks, and in the sheds, do as well, if not better, than those which we stable. Our sheds are comfortably arranged as well as the yards, and the stables are built on a principle or plan which cannot but suit the taste of every lover of nicely regulated stalls. No tying with ropes is required; all that is necessary is to open the doors, (for every stall, five by eight, has a door,) and let the cattle or cows pass right in, without interruption, putting their heads directly through a two-feet hole at the upper end of the stable, and the eating process is commenced immediately. Stalls built in this manner, with an alley three or four feet wide in front of the cattle, for the purpose of convenience in feeding, &c., are adapted to the wants of farmers and cows as well as any I have ever seen or examined. Of course the hay is kept above the stables, and is thrown down through convenient-sized holes into the alley.

But, notwithstanding the convenience and warmth of such stalls, I cannot fall in with the idea that they are better adapted to

promote the thrift, growth, &c., of cattle, than good, nice, snug and convenient sheds. It does not require any more labor to strew a shed that will accommodate a dozen cows with straw, than it does to litter eight or nine stables. Cattle, like men, should breathe pure air, and not be confined to tight stalls, where they will be under the necessity of inhaling atmosphere that has been used three or four times over. I do not wish to be considered *ultra* in expressing my views in relation to stables, but would simply state that from experience, observation, trial, and the like, I have adopted the idea that cattle do fully as well, and, I am of opinion, better, in comfortable sheds and yards, with the same feed and care, than they do when shut up in stables.

It may be said that stabling cows has a tendency to increase their milk. There may be some truth in this; but it must be kept in mind that cows that are stabled generally have better care, and are better attended, than those which run out. When cows are stalled, they usually get slop, corn, and things of that nature; whereas those that live an out-door life do not in many instances get these things; and hence the reason why cows running in yards or sheds do not give as much milk as those that are stabled.—W. Tappen, *Baldwinsville, N. Y., Jan.*, 1852.

The best Method of Curing Butter.—As soon as the butter has been sufficiently churned to cause it to separate from the buttermilk, and collect into a mass by itself, take it from the churn and work it well in a sweet wooden vessel, with a spatula or spoon of close-grained wood, (both having previously been thoroughly scalded in boiling water,) until quite free from the buttermilk; then add about half an ounce of the best blown or ground rock-salt to each pound of butter, working it well into the mass; after which leave it in a cool place twenty-four hours, or longer if necessary, and work it again until entirely free from the buttermilk, and add to each pound half an ounce of the following preparation, viz.: one pound of salt, eight ounces of loaf-sugar, and half an ounce of saltpetre, well pulverized, and mixed together. To each pound of butter add half an ounce of the mixture, and incorporate it thoroughly with the butter, (adding in addition a small quantity of best table salt, if desired to suit the taste,) and pack it closely in layers in stone jars or sweet wooden tubs, using a small quantity of the preparation between each layer of the butter. It is usual to put a layer of salt or a quantity of brine on the top layer, for the purpose of keeping it sweet; but this is attended with a loss of flavor, and frequently renders the first slice unfit for table use. All that is necessary effectually to preserve it, is to prepare a *double* cover of thin muslin, carefully fitted to the shape and size of the jar or tub, between the folds of which stitch loosely a layer of the above mixture, and keep it spread evenly over the surface of the butter. This is much more convenient and effective than the usual method.

A Lively Trade.—From the recent report of the Methodist Book Concern in New-York, it appears that the sales for the last twelve months were more than $200,000, being an increase of $65,000 over the previous year, and exceeding all former years. The profits on the new Hymn Book were $47,561. The Christian Advocate and Journal has a circulation of from 25,000 to 29,000; the Missionary Advocate, 20,000; the Sunday-school Advocate, 65,000; with a yearly sale of Sunday-school books amounting to $5000. The Quarterly Review has 3000 subscribers.

To Bake Apples.—Sweet apples, properly baked and eaten with milk, are excellent. The best method of baking tart apples is to take the fairest and largest in size, wipe them clean, if thin-skinned, and pare them, if the skin is thick and tough; cut the largest portion of the core from one end, and place the fruit on well-glazed earthen dishes or pans, with the end which has been cored upward, and fill the cavity with refined powdered sugar. Then place them in the oven or other apparatus for baking until sufficiently cooked. Take them out, and when cold they are perfectly delicious.

Virginia Egg Bread.—Dissolve one tablespoonful of butter in three and a half pints of milk; add one quart of Indian meal, half a pint of wheat flour, a little salt, and two eggs well beaten; mix all well together, and bake in a buttered tin.

Minute Pudding.—Put a pint and a half of milk on the fire; mix five large spoonfuls of flour with half a pint of milk, a little salt and nutmeg. When the milk boils, stir in the mixed flour and milk. Let the whole boil for one minute, stirring it constantly. Take it from the fire; let it sit till luke-warm; then add three beaten eggs. Let it bake on the fire, and stir it constantly until it thickens. Take it from the fire as soon as it boils. To be eaten with nice sauce.

Apple Bread.—Take two parts of flour to one part of apples, stewed; stir them quite warm into the flour; put in a little yeast; knead it without water, the fruit

being quite sufficient. Let it remain in the pan to rise for twelve hours; then put it into small pans and bake it. It makes very light and palatable bread.

WATER FOR CATTLE.—Few persons are aware how important an item in cattle-husbandry it is for animals to be able to procure pure water when they need it. This applies to all seasons, and particularly in winter, when they are subsisting on dry food. Animals, when water is not convenient, or situated in bad icy holes, or a great way off, will only resort to it when in extremity; and then they overload the stomach, prostrating the whole viscera of the digestive organs with an immense amount of a cold fluid, that will require the entire nutritive means of one feeding to create animal heat sufficient for the ice in their bellies.

TO PREVENT BOTS IN HORSES.—A person of much experience in veterinary science is never troubled with this disease in his horses. His simple practice during the fall months is, to keep a greasy cloth in the stable, and once a week rub with it such parts of the animals as may have been attacked by the nit-fly. Grease destroys and prevents the eggs from hatching.

STRAINED OIL FOR SUMMER OR WINTER USE.—To have sperm oil always of a good quality and invariably to burn well, it requires only to be pressed or strained at a temperature *just at or a little below that at which it is to be burned.* That strained in summer is only fit for summer use, as it will always chill in winter, and that intended for winter use should always be pressed at the lowest temperature. Let this rule be observed, and there would never be any complaint of lamps "gumming," as it is generally termed. The grossest imposition is very frequently practised in the manufacture and sale of oils, purporting to be genuine *sperm*, which are nothing more or less then the common "blackfish" or "blubber" oils, bleached and clarified for that purpose. In nothing, perhaps, greater caution is requisite than in the purchase of oil for burning.

A GOOD MOTIVE.—Rev. Mr. Clift, in speaking of the article over his signature in the present number, remarks: "I have taken to writing for agricultural journals strictly in the exercise of my professional calling, and to gain certain moral and religious ends to which the clergy are particularly consecrated. I regard scientific agriculture as intimately connected with the salvation of our rural parishes, and hope to succeed, in my own neighborhood at least, in awakening attention to the fact. I think the views advanced in my article are calculated to awaken interest in agriculture where little interest in the subject has been felt, and to bring a new and powerful class of motives to bear upon the advancement of agricultural science among us."

GLASS FACINGS FOR BUILDINGS.—A correspondent of the London Builder suggests the substitution of glass for the stone facings of buildings; not translucent or crystal glass, but glass ground of the requisite thickness and strength. Such a material, he adds, would not absorb the dust and smoke constantly floating in the air; but every shower would wash them off, and buildings would look as fresh and new as ever. And as glass, from recent improvements, can be moulded to any shape, almost as perfectly as if cut, the most exquisite Gothic and other ornaments could be produced.

TOPICS OF THE PRESS.

VEGETABLE MONSTER.—Mr. Joseph Pearson, of Newton township, in this county, says the Troy (O.) Times, has placed upon our table a vegetable curiosity, in the shape of a monster potato. The sample before us is of the Mœrino kind, and when first dug, weighed three and three quarter pounds. The curiosity is more in the shape that this vegetable has grown, than in the weight or size it has attained. There is a main branch about nine inches in length, and from this, six potatoes of fair proportions, varying from seven to three inches in length, have shot out. Each could be so separated as to retain a good shape without marring any. The seven would be ample for a Sunday dinner for a small family, and all these have grown together from one fibre or root. There is one peculiarity about the Mœrino potato, which we believe is not possessed by any other species grown among us, and that is, their incapability to adulterate with others planted about them. Mr. Pearson informs us that he has cultivated this species of potato for more than thirty years, and in that time has discovered no adulteration whatever. The good qualities of these potatoes are found to be in the sureness of the crop, and the great amount of yield per acre. They do not attain their full ex-

cellence for the table use before spring and summer, when they are found to have few if any equals. We invite the attention of our farmer friends to this specimen presented us.

Waters of the Dead Sea.—About a dozen analyses of the waters of the Dead Sea are on record. The first was made by Professor Gmelin, of Tubingen, and reported in Poggendorff's Journal in 1827. The second was made by R. P. F. Marchand, of water brought to Berlin by Kunowski, in 1849. The third by Messrs. Herapath, of London, of water obtained by C. J. Monk, in March, 1850. The last is an approximate analysis by the younger Professor Silliman. As useful references, we append a table of these analyses:—

	Gmelin.	*Marchand.*	*Herapath.*
Chloride of Sodium,....	7.078	6 578	12.110
Chloride of Magnesium,	11.773	10.543	7.822
Chloride of Calcium,....	3.214	2.894	2.455
Chloride of Potassium,..	1.674	1 398	1.217
Chloride of Manganese,.	.212		.006
Chloride of Iron,.....			.503
Chloride of Aluminum,.	.090	.018	.056
Chloride of Ammonium,	.007		.006
Bromide of Magnesium,.	.439	.251	.251
Sulphate of Lime,.....	.053	.088	.068
Silica.....		.003	traces
Nitrogenous organic matter,.....			.062
	25.540	21.773	24.056
Water,.....	75.460	78.271	75.952
	100.000	100.044	100.008

B. Silliman, Jr.

Water,.....	82.139
Chlorine,.....	10.290
Bromine,.....	.684
Sulphuric Acid,.....	trace
Magnesia,.....	2.355
Soda and trace of Potash,.....	3.008
Lime,.....	1.424
	99,900

An Excellent Method of Preserving Hams.—One of the most effectual methods of preserving hams is to place them in good sweet pickle made from pure rock-salt, with the addition of a pound of clean sugar for every peck of salt used. When sufficiently salted, take them out on a dry, cool day, if possible, and sprinkle them thoroughly with clean, dry, hickory wood-ashes. Hang them up as high in the smoke-house as possible, and smoke them with cool smoke made from hickory wood or corn-cobs. When sufficiently smoked, take down the meat, (always before the skipper-fly makes its appearance,) and pack it perfectly dry in casks, in the following manner: First put a layer of hams in perfectly clean, dry, hickory ashes, filling closely every crevice about the hams, and then a course of corn-cobs broken small, (or, if ground, it would be better,) and so on, alternately a layer of hams in ashes and one of cobs, until the cask is filled; then cover or head it up tight, and keep it in a dry, cool place. Hams cured and preserved in this way will be perfectly sweet and good for two or three years.

Long Island Cotton.—It has not been known until within a very short time that cotton could be raised at all in this part of the country; but this season, cotton equal to the best Sea Island has been raised on Long Island, by Mr. A. P. Ricker, of Newtown, and it is believed that it can be made a profitable crop by a little attention. Tobacco has also been raised on the island with satisfactory results, and it is not among the impossibilities that this section of our State may, eventually, furnish large quantities of these articles for the market. Mr. Ricker intends, another season, we understand, to make quite a crop of cotton and tobacco.

New-York Cattle Trade for 1851.—We present below (says the New-York *Times*) our regular annual statement of cattle, at this market, by far the the most important mart of the kind in this country. It is proper to state here that it is difficult to ascertain, with precision, the exact amount of cattle sold yearly, at the various drove-yards within the limits of the city; but it is believed that the figures in the main are essentially correct.

The largest number of beeves is sold at the Washington Drove-Yard, Forty-fourth street and Fourth Avenue; and next to that, Chamberlain's, "down town," Bull's Head, in Robinson street, does the most extensive business. Independently of these, however, there are large numbers of cattle disposed of elsewhere throughout the city and at the boats, which are never taken into account. There are also many beeves slaughtered up the North River, and brought down dressed to our city markets. A careful estimate, with the data before us, would put down the aggregate number of beef cattle annually consumed in this city at about 120,000 head.

The principal market for the sale of cows and calves, and sheep and lambs, is at George Browning's Bull's Head, in Sixth street, near the Third Avenue, and next to that in importance, at the Hudson River (Chamberlain's.) Many small sales, however, are made at the wharves as above, on the North River of this city.

The market-days now are Mondays and Thursdays. About 400 beef cattle, on an average, are driven to this city weekly from Philadelphia. There are also occa-

sional shipments to Bermuda, to supply the British naval contract.

STOCK OFFERED MONTHLY.

	Beeves.	*Cows and Calves.*	*Sheep and Lambs.*
January,	6,550	341	26,250
February,	6,600	260	25,550
March,	5,875	485	21,350
April,	5,800	410	10,000
May,	6,850	570	15,100
June	6,500	600	19,000
July,	7,300	530	18,000
August,	11,000	515	80,650
September,	9,000	425	29,600
October,	8,669	490	23,500
November,	8,050	375	25,600
December,	6,800	453	27,600
Total,	88,994	5,466	264,200

MONTHLY AVERAGE OF PRICES.

	Beeves.	*Cows and Calves.*	*Sheep and Lambs.*
January,	$5 50*a*$8 00	$20*a*$40 00	$2 00*a*$5 00
February,	6 00*a*$8 50	22*a*$42 00	2 00*a*$5 00
March,	6 00*a*$8 50	25*a*$40 00	2 25*a*$6 50
April,	6 00*a*$9 00	20*a*$41 50	3 00*a*$7 00
May,	7 00*a*$9 00	20*a*$42 00	2 25*a*$4 25
June,	6 00*a*$8 00	20*a*$45 00	1 64*a*$4 00
July,	6 00*a*$8 00	20*a*$44 00	1 75*a*$4 25
August,	6 00*a*$7 25	20*a*$43 00	1 50*a*$4 50
September,	6 00*a*$7 50	20*a*$40 00	1 59*a*$4 00
October,	5 25*a*$7 50	24*a*$42 50	1 75*a*$5 00
November,	6 00*a*$8 00	20*a*$48 00	1 30*a*$4 00
December,	8 00*a*$8 25	22*a*$35 50	1 50*a*$7 00

BEEVES ON SALE, 1850.

Statement of beef cattle in the yards of the Washington Drove-Yard, for each month during the year 1850:—

January,	7,242
February,	5,630
March,	4,769
April,	6,571
May,	6,689
June,	7,347
July,	7,130
August,	7,295
September,	8,270
October,	8,380
November,	7,775
December,	6,745
Total,	83,885

The Washington Drove-Yard commenced business on the 8th of May, 1848. The number of cattle offered from that time until

1st of January, 1849, was	48,204
1st of January, 1850, was	78,200
1st of January, 1851, was	83,835
1st of January, 1852, was	88,934

From the above statement it will be seen that the cattle trade of this city is steadily and progressively increasing. An immense capital is involved in it, amounting to several millions of dollars annually.

PATENT FLAX-PULLER.—The Janesville (Wis.) Badger State says: The only really new thing we saw at the late Fair was a model of a machine invented by S. B. Goss, of Newark, in this county, for harvesting flax. It seemed so simple in its arrangement, and so easily comprehended, as to leave scarcely a chance to doubt that it must work to the satisfaction of the ingenious inventor. If it meets his expectations, it will pull flax as fast as a horse-power reaper can cut grain—say 20 acres per day—and do it in the most perfect manner. This invention comes opportunely with the late wonderful discoveries in preparing the flax fibre for manufactories; and those who can remember the back-aching work of flax-pulling, will call him blessed. We shall watch the progress of this machine with interest.

LARGE RYE.—We were presented last week, says the N. C. Star, by Dr. Sills, of Nash county, with a sample of rye, which he has been raising two or three years, which excels any specimens of that grain we have ever seen. It is larger than wheat, and so much resembles it in color, that it would be taken for that grain, but for the peculiar shape of the rye, which it retains. It was brought from Georgia, and is evidently a distinct variety. It is not only remarkable for size, but for the abundance of yield. A gentleman in Franklin, we learn, raised last season six bushels from a peck. It does best on a rich soil, like most other productions of the earth; and not being so hardy as the common rye, the best time to sow it, in this climate, is about the middle of February. We presume Dr. Sills would furnish any of our farmers, who may desire to try it, with seed.

SINKING OF A TENNESSEE MOUNTAIN.—It is stated that a few days ago, a portion of Walden's Ridge sunk, with a noise resembling deep-toned thunder, leaving a huge gap in the timber that fringes the sides of the ridge, extending about two miles in a parallel direction with the top. The gap in the dense timber appeared to be about sixty or a hundred feet in width, and the fissure in the earth reached to an unknown depth, in which trees of the largest size were torn up, and enormous rocks, which had probably lain concealed for ages, were rent from their primitive beddings and laid bare. The foundation on which the mountain rests is supposed to have given way.

HENS IN WINTER.—A shed behind your horse-stable is the most favorable place for hens during the winter. You can throw the manure from the stalls into it; and as horse-dung, especially where the animals are grain-fed, ferments rapidly and powerfully, its heat will conduce to keep up a genial and summer-like temperature, highly advantageous to the fowls. By sprinkling sulphuric acid freely over the surface every few days, all the unpleasant and deleterious

consequences resulting from the ammoniacal gas evolved by the manure are neutralized and saved for the benefit of the crops. Another important advantage attending this practice, is the saving effected by the economization of the grain contained in the excrement.

STATISTICS OF MANUFACTURES.—From a Washington correspondent, says the *Journal of Commerce*, we have received the following statement of the results of the census of 1850, as it respects manufactures:

AGGREGATE OF MANUFACTURES.

Capital invested in manufactures, June 1, 1850,.....	$530,000,000
Raw material consumed,...	550,000,000
Amount paid for labor,....	240,000,000
Value of manufactured articles,.....	1,020,000,000
No. of persons employed, ..	1,050,000

COTTON GOODS.

Capital invested in manufacture, ...	$74,500,000
Raw material used,.....	35,000,000
Value of manufactures,....	61,000,000
Paid for labor, ...	18,000,000
Hands employed,.....	92,286

PIG IRON.

Capital invested in manufacture, ...	$17,348,000
Raw material consumed,...	7,000,000
Cost of labor, ...	5,066,000
Value of products,.....	12,740,000
Hands employed,.....	20,458

CAST IRON.

Capital invested in manufacture, ...	$17,456,000
Raw material, ...	10,346,000
Labor,.....	7,000,000
Value of product,.....	25,000,000
Number of hands, ...	20,507

TO BOIL POTATOES MEALY.—When the water nearly boils, pour it out and put in cold salted water; it makes them mealy without cracking them.

A BEAR CAPTURED BY CHLOROFORM.—A newspaper published at Montauban, Spain, gives an account of the capture of a huge bear by choloroform, which is somewhat amusing. His bearship had for a long time been the terror of the district, entirely defying all attempts at capture. Even the most daring hunters dared not approach him sufficiently near to give him a death-wound, and so the bear was left to his glory, making predatory excursions continually among the sheep and cattle of the surrounding farms. At length a Doctor Pegot hit upon a plan for securing the monster by the use of chloroform. Early one morning he proceeded to the cave where the bear slept, accompanied by a party of peasants; and having made sure by the snow just fallen that the animal was within, the peasants ran up and fastened up the entrance with iron bars, which prevented the bear from coming out. Over the bars they stretched blankets to prevent the ingress of air, and now, all being ready, the operation of putting Monsieur le Bear under the influence of chloroform commenced. The Doctor took a large syringe, and, having filled it with the somnolent liquid, discharged it, through an aperture in the blanket, into the interior of the cave. This being several times repeated, the bear soon fell into a deep sleep; when the Doctor marched in and secured his prize in triumph. They bore the poor bear away, tied limb and limb; keeping a cloth saturated with chloroform constantly at his nose; and took him to the village, where, a cage having been prepared, the bear was permitted to awake. Great excitement followed all around as the news of the capture of the wild beast became known, and crowds came to behold him, secured in his cage. In the evening, the village was illuminated in rejoicing, while the praises of science and Dr. Pegot fell from every lip. This is the first instance of the capture of a wild animal by chloroform.

MANURING FRUIT TREES.—This is the season, remarks the *Horticulturist*, for the amateur to look over his fruit trees, especially those which have failed to produce good crops for want of nourishment in the soil. Carefully open a trench at the very ends of the roots; throw out a third of the poorest of the soil, and replace it with a mixture of manure and ashes. I use a cart-load of barn-yard manure—no matter if it is fresh—to a bushel of ashes, and I find it never to fail in bringing up the tree. If I wait till spring before I apply this stimulus, I find it to do just half as much good as if I put it in the soil in October and November. It is quite surprising how old fruit trees can be brought to by this simple dressing, barn-yard manure and ashes, applied in the fall of the year.

PERPETUAL MOTION.—The *Redland* (Texas) *Herald* remarks: "As incredible as it may appear to many, the secret of perpetual motion has really been discovered by three young men of our county, by the name of Force. They are now in Washington city, applying for a patent, and they write back that there is no doubt of success. The principle upon which the machinery is propelled, is the pressure of atmospheric air upon a succession of vacuums. They have been offered in Washington $50,000 for the patent right for the State of New-York."

EDITORIAL AND SELECTED MISCELLANY.

Mr. J. Winslar Ayer, of Boston, is appointed to make a geological survey of the coal-fields which are said to exist in the neighborhood of St. John, N. B. . . . Birds of Paradise always fly against the wind, and heavenly-minded souls move against the current. . . . In one of the Unitarian societies in Boston, there are ten gentlemen who are unitedly worth more than ten millions of dollars. . . . A supply of New-England ice has been secured to San Francisco and Sacramento City, through the enterprise of the Boston and California Ice Company. . . . Accounts to the end of August state that the unusually warm weather had hastened the ripening of the fruit at Malaga, which was coming in earlier than had been expected. . . . A mind properly constituted can accommodate itself to whatever pillows the vicissitudes of fortune may place under it. . . . A fine bronze equestrian statue of Bernadotte is about to be erected at Stockholm by the inhabitants. The model is by Fagelberg, now at Rome. The statue will be cast at Munich. . . . The people of Quebec talk about a line of steamers from there to Liverpool. . . . Ninety-five thousand dollars have been subscribed in Ohio for a Farmers' College. . . . The Grand Jury have indicted twenty-five of the slave-rioters at Syracuse, including some of the prominent citizens of the place. . . . A new cotton factory, recently erected at Reading, Pa., by Senator James, of Rhode Island, has been put into operation. . . . We regret to learn that Mr. Clay still continues in a very delicate state of health, and that his friends despair of his recovery. . . . The severity of the season has interfered sadly with travel in all parts of the Northern and Middle States. Besides the Delaware, the Susquehanna, the Potomac, and other streams to the south of that parallel, have been entirely closed or greatly obstructed with ice. . . . In Indiana there are now 450 miles of railroad completed and run over by daily trains. There are 1020 miles under construction. . . . The *Scientific American* states that "if, at two feet above the throat of your chimney, you enlarge the opening to double the size for a space of two feet, then carry up the rest as at the first, your chimney will never smoke." . . . The cars on the Ohio and Pennsylvania Railroad run now from Cleveland to Pittsburg in twelve hours. What a change! A few years ago, people took nearly as many days to go from the one place to the other. . . . We see it stated in the Western papers that Dr. Kinkel has collected the sum of $30,000 among the Germans of the West, to aid in regenerating Germany. . . . Snow fell at Charleston and Savannah on the 18th of Dec. This is said to be the first snow in that region for more than twenty years. . . . The Imperial Palace at Delhi, with its subordinate buildings, is two miles long. The largest crystal in the world is in this palace. It is four feet long, two and a half feet broad, and one foot thick, and is very transparent. . . . Hon. Joel R. Poinsett died at his residence in Statesburg, South Carolina, on Friday, Dec. 12, at the venerable age of seventy-three years. . . . The passage across the East river, New-York, has not been so impeded for the last four years as it was the past month by floating ice. . . . Jenny Lind has received intelligence of her mother's death in Sweden in October last, in consequence of which mournful news she will close her concerts in the United States at once. . . . It is proposed to raise, by subscription, a monument of the purest Parian marble to the memory of the little school-children who perished at the New-York school catastrophe. . . . The coffee tree is from six to ten feet high; begins to bear the second or third year, and remains fruitful ten years. . . . Frederika Bremer arrived at Stockholm on the 22d November last, in season to be present at the funeral of her elder sister, Miss Marie Bremer, from whom she inherits a very large fortune. . . . One of the Philadelphia ferry-boats, running to Camden, was nineteen hours crossing the river on Sunday, 20th Dec., the stream was so full of ice. . . . Dates from Jamaica to the 20th Dec., report that the cholera

was extending its ravages in many parts of the island. . . . The second track of the New-York and New-Haven Railroad is finished from New-Haven to Fairfield. . . . An American merchant, resident in Paris, who was at his office during the recent *emeute*, had to creep on his hands and knees for the distance of two blocks, to escape being shot. The balls of the contending parties flew over his head and struck against the walls. . . . The Erie Railroad Company is about to fund a new floating debt of three million dollars, by an auction sale, at 7 per cent. . . . Dr. Cogswell, the superintendent of the Astor Library, has returned from his foreign tour, after having purchased thirty thousand volumes of the most rare and valuable works. . . . The magnetic telegraph wires have been laid across the bed of the Mississippi river, opposite St. Louis, insulated in a thick casing of lead pipe. . . . A report of roads in Kentucky reads thus:—"No gravel or macadamized road is fit for use until it is firmly cemented by continual travel." . . . The unusual height to which the Nile has risen this year has caused a great deal of damage in the country, and some of the next year's crop will suffer considerably from it. In some places the embankments have given way, and whole villages have been destroyed by the flood. . . . At a concert recently, at the conclusion of the song, "There's a good time coming," a country farmer got up and exclaimed, "Mister, you could n't fix the date, could you?" . . . More whisky is exported from Cincinnati than from any other port in the Union. . . . In Wisconsin, within a circle of some thirty or forty miles diameter, there is a Norwegian colony settled, of 15,000 souls or more, and a church of over 100 has just been formed among them. . . . A book and print seller at Pesth has been arrested, and sentenced to eight days' imprisonment, for having in his possession portraits of revolutionary personages. . . . Several applications have been made to the Auditor of the State of Illinois for authority to do a banking business under the law recently approved by the people of the State. . . . Coal, of good quality, has been discovered in the Stack House Mountain, in Hampshire county, Virginia. . . . A message from Paris to England, and an answer returned, in a minute and a half, was lately achieved by the submarine telegraph. . . . The average annual expense to each church-goer in Russia is seven and a half cents; in Italy, twenty cents; in the United States, seventeen and a half cents; in Catholic Austria and Protestant Prussia, twenty-five cents; in Spain and Portugal, fifty cents; while in England the average expense is seven dollars twenty-seven cents! . . . Plato, speaking of passionate persons, says: "They are like men who stand on their heads; they see all things the wrong way." . . . The *Minden Herald* says that in Claiborne and Bossier parishes the cotton crop will probably be twice as heavy as was anticipated a few months ago, the second crop having generally thoroughly matured. . . . Boston, in England, has presented Boston, in the United States, with some seals and documents—an act of courtesy that has been courteously acknowledged by the latter. . . . Excavations near Malton, England, in the course of the construction of the Thirsk and Malton railway, have disclosed several antiquities of interest. The sites of British and Roman encampments; the foundations of ancient buildings; two human skeletons, one of them in good preservation, the other very much decayed; a funeral-urn; and various coins of Vespasian, Domitian, Constantine, and Aurelian, are among the interesting discoveries which have been made. . . . At all seasons of the year, cattle should have salt and ashes given to them. Especially is this necessary during those periods when they are confined to green and fermentable food, which induces flatulency. . . . The London *Literary Gazette* says it is a curious fact that several able botanists explored and resided in the gold regions of California, aware of the indications of the precious metal, before the rush to the "diggings," but "were too absorbed in the delights of their own peculiar pursuits to think of grubbing for lucre." . . . It is said that if horses are liberally supplied with salt and clean wood-ashes, they will neither be troubled with bots nor colic. . . . Passion makes them fools which otherwise are not so, and shows them to be fools which are so.